

ANNUAL REPORT
OF THE
FRUIT GROWERS' ASSOCIATION
OF
ONTARIO
1888-9

TWENTIETH ANNUAL REPORT

OF THE

FRUIT GROWERS' ASSOCIATION
OF ONTARIO.

1888.

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1889.



A. McD. ALLAN, GODERICH,
President of the Fruit Growers' Association of Ontario.



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TWENTIETH ANNUAL REPORT
OF THE
FRUIT GROWERS' ASSOCIATION
OF ONTARIO, 1888.

To the Hon. Charles Drury, Minister of Agriculture :

SIR,—I have the honor of submitting to you the Twentieth Annual Report of the Fruit Growers' Association of Ontario, a volume containing a full account of the meetings held during the past year, and carefully revised copies of all valuable papers contributed.

During the past year the Association has met at the city of Ottawa and at the town of Picton, and has had the effect at these places of increasing the public interest in the production of the best varieties of fruit. The discussions have been carefully taken down, and everything irrelevant struck out, so that I believe this Report of our work will meet with your approval.

It has been decided by our Directors to unite the Annual and the Winter Meetings of our Association, thus increasing the importance of our winter gathering, and at the same time husbanding our resources for other purposes.

An effort has been made during the past year to improve *The Canadian Horticulturist*, and to make it more efficient, and this effort seems to be much appreciated by our membership. Should the funds at our disposal permit, it is the intention to enlarge the journal for the year 1889 to thirty-two pages, as its present size is too small for the increasing number of contributions sent in for its columns.

I am, Sir,

Your obedient servant,

L. WOOLVERTON,

Secretary.

OFFICERS FOR 1889.

PRESIDENT:

Alexander McD. Allan Goderich.

VICE-PRESIDENT:

Andrew M. Smith St. Catharines.

SECRETARY-TREASURER AND EDITOR:

Linus Woolverton, M.A. Grimsby.

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Agricultural Division No. 1	John Croil, Aultsville.
Agricultural Division No. 2	P. E. Bucke, Ottawa.
Agricultural Division No. 3	Rev. Geo. Bell, LL.D., Kingston.
Agricultural Division No. 4	P. C. Dempsey, Trenton.
Agricultural Division No. 5	Thos. Beall, Lindsay.
Agricultural Division No. 6	W. E. Wellington, Toronto.
Agricultural Division No. 7	M. Pettit, Winona.
Agricultural Division No. 8	A. H. Pettit, Grimsby.
Agricultural Division No. 9	J. K. McMichael, Waterford.
Agricultural Division No. 10	J. A. Morton, Wingham.
Agricultural Division No. 11	J. M. Denton, London.
Agricultural Division No. 12	Judge McKenzie, Sarnia.
Agricultural Division No. 13	G. Caston, Craighurst.

AUDITORS:

James Goldie.....	Guelph.
Nicholas Awrey, M.P.P.	Binbrook.

THE ANNUAL MEETING.

The annual meeting of the Fruit Growers' Association of Ontario, was held in the Court House, Hamilton, on Tuesday, the 19th day of February, 1889, at 8 o'clock p.m.

The President, Mr. A. McD. Allan, of Goderich, occupied the chair.

The minutes of the last annual meeting, as appearing in the Annual Report, were taken as read.

The Treasurer's report, duly audited by Messrs. Charles Drury and James Goldie, was read by the Secretary-Treasurer.

This report was received and adopted.

The reading of the President's address being in order, it was moved by Mr. W. E. Wellington, seconded by Mr. W. Holton, and resolved that it be deferred until Wednesday morning at 10 o'clock.

His Worship the Mayor, Mr. Wm. Doran, having arrived, made an address of welcome, in which he said that as head of the corporation of the city of Hamilton, he had much pleasure in welcoming so important an organization as that of the Fruit Growers' Association of Ontario. He regretted that the city had not at present a hall of sufficient size to accommodate such a large and important meeting as this, but a new city hall was in process of erection which would be a credit to the city, and he was sure it would be at any time at the disposal of the Association. During the thirty years of its history, since its first organization in this city in 1859, the Association had conferred great and lasting benefit upon the country at large. He could remember when, in the Niagara district for instance, very little interest was taken in fruit culture, but now, through the work of this body, that district had become famous as a fruit garden.

The President replied as follows:—Mr. Mayor: It is my pleasant duty to thank you for your very kind remarks of welcome. We have frequently met in this city, and some of the most successful of our meetings have been held here. That old hall, upon the site of which you are now erecting a new and elegant edifice, was almost sacred to some of us. It was there that the pioneers of this Association often met. There, I believe, was held one of the last meetings at which the late Charles Arnold met with us, one of those pioneer members. We are glad to hear such remarks from one in your position. We are pleased that the leading men in our country are taking an interest in horticulture as well as in agriculture.

A Committee on Nominations was appointed as follows: Messrs. M. Pettit, A. Alexander, and Robert Walker, by the Association, and Messrs. J. M. Denton and Thos. Beall by the chair. This committee submitted their report, which was received, and after the names had been voted upon *seriatim*, was adopted.

The report was as follows :—

President.—A. McD. Allan.

Vice-President.—A. M. Smith.

Directors.—Messrs. John Croil, P. E. Bucke, Rev. Geo. Bell, P. C. Dempsey, Thos. Beall, W. E. Wellington, M. Pettit, A. H. Pettit, J. K. McMichael, J. A. Morton, J. M. Denton, Judge McKenzie and G. Caston.

Auditors.—Messrs. James Goldie, and Nicholas Awrey, M.P.P.

A Fruit Committee was appointed by the chair, consisting of Messrs. W. E. Wellington, T. H. Race, and A. Alexander.

At a meeting of the Board of Directors, held subsequent to the election, L. Woolverton, of Grimsby, was appointed Secretary-Treasurer of the Association, and Editor of the *Canadian Horticulturist*.

TREASURER'S REPORT FOR THE YEAR 1887-8.

RECEIPTS.		EXPENDITURE.	
	\$ c.		\$ c.
Balance on hand last audit.....	499 44	Plant distribution	325 95
Members' fees	1,953 50	Directors' expenses	427 70
Advertisements	137 73	Express and duty.....	142 22
Back numbers and bound volumes	31 11	Chromo lithographs.....	337 60
Discount on plants, etc.....	7 50	Printing and stationery.....	83 71
Government grant.....	1,800 00	Audit, 1887-8	10 00
		Postage and telegrams.....	82 67
		Case for medals.....	6 00
		Small items	1 34
		Electrotypes	45 45
		Commissions	95 53
		Caretaking of rooms for meetings.....	6 00
		<i>Canadian Horticulturist</i> (including balance to Copp, Clark & Co.....	1,422 92
		Stenographer.....	176 15
		Salary secretary-treasurer and editor..	600 00
		Exchanges	1 00
		Balance on hand, Sept. 1st, 1888.....	665 04
Total receipts	4,429 28		4,429 28

We, the undersigned Auditors, have duly examined the accounts of the Treasurer of the Fruit Growers' Association of Ontario, and certify them to be correct, showing a balance of \$665.04 in the bank to the credit of the Association.

CHARLES DRURY,
JAS. GOLDIE, } Auditors.

TORONTO, December 23rd, 1888.

THE PRESIDENT'S ANNUAL ADDRESS.

The President, Alex. McD. Allan, Esq., of Goderich, delivered the following address at the annual meeting :

To the Members of the Fruit Growers' Association of Ontario :

The past season has been eventful to the fruit grower, and while we may offer congratulations upon the generally large crop, we are reminded that other elements are necessary to ensure profit. Probably we have never had a season in this province that shippers of apples lost so much money in as the past, and while doubtless the large crops of other countries contributed to the bringing down of prices in those markets where ours were disposed of, it is clear from the general returns of sales that the low prices are, to some extent, to be accounted for in other ways. Buyers too often aim at handling large lots rapidly, and hence we find often two or three brands of fruit in each barrel. If half or one-quarter the quantity had been handled by such buyers there would have been proper selection, evenness of brands, better packing and a remunerative sale. Competition is healthy and good in any business, but those who compete as purchasers of our fruit crop for export should first of all be sure that they understand their business. They must know when, where and how to buy, and especially what to buy. If the buyer does not know what the market he intends shipping to demands, how can he reasonably expect to supply customers there profitably? Those who made money the past season only handled the best selection of a few varieties; they also exercised care in having the fruit picked in proper season, and the packing was done by well recognised rule. To me it seems clearer than ever that buyers in order to succeed and at the same time do entire justice to growers must adopt a different system. They must buy only such varieties as they find will carry properly and suit the markets they deal with, and they must pay for the fruit, not so much per barrel for all fall varieties, and so much more for all winter varieties, but the value of *each variety* should be paid to the grower, and then only in accordance with the quality of the fruit, which can be judged by the labor and care expended by the grower in producing the crop.

The grower who has not cultivated, manured, trimmed his trees, kept their wood clean and healthy, and where necessary, thinned out the fruit, should not expect the same return from his orchard as the grower who has attended to these matters. Growers are still cultivating too many varieties. Exhibitions are responsible, to some extent, for this in offering prizes for large collections. I would not advocate a prize for a larger collection of kinds than ten, whereas most of the leading agricultural associations offer prizes for collections of twenty, and some even forty. The grower who honestly puts up such a collection, I venture to say, does not make profit out of his orchard excepting from a few kinds in the list. There is also an inducement to dishonest men to gather specimens over neighboring orchards in order to fill a large collection. The prizes should be so arranged as to bring out the best fruits for family use, local markets and shipping. When we come down to this we find but few varieties profitable, and hence probably a majority of the trees in many orchards are but cumberers of the ground. Looking at the yearly growth of competition in the fruit markets it is clear to me that the time has come when we must grow such varieties of the various fruits as we find succeed the best in the various sections, or in other words we must make specialties of growing only such kinds as we can bring to the highest state of perfection. If we consult the sale lists it is clear that certain sections can grow certain kinds much better than other sections, owing no doubt to a difference in climate and soil largely. The Annapolis Valley, Nova Scotia, has a specialty in Gravenstein, Ribston and Blenheim Pippins and King. The Island of Montreal and some sections of Eastern Ontario and Quebec can produce much finer specimens in Fameuse, Irish Peach and St. Lawrence than we can in the west. I doubt if any part of Western Ontario can produce as fine Blenheim Pippin as we find in the county of Wellington. And so on in every section we find specialties. The finest flavored grapes, outdoor varieties, are, in my opinion, grown in the Ottawa district, and the Collingwood district plums are richer than those grown in any district farther south.

Although the past season has been disastrous to many shippers financially, yet we find a grain of comfort in the fact that the exceedingly low prices obtained in Britain have enabled a much larger class of consumers to cultivate a taste for our fruit, who in future will doubtless be willing to buy at much higher prices rather than forego the luxury. If shippers follow next season with greater care in selecting and packing they may not only redeem their financial position by high prices but gain for themselves and the country a high reputation.

It is clear that apples have not stood shipping and storing as well as usual the past season, which may be accounted for to some extent by the dry season at the growing period when moisture in the soil is so much needed. The fruit had actually commenced to ripen before attaining proper size. Orchards under cultivation suffered less than those in grass, and where a top dressing of manure had been applied, the fruit was fully up to the average of other years in all respects.

I believe apple shippers should do something in the way of experimenting with various sizes of packages. While in the past, doubtless the common barrel has been both more convenient and cheaper than any other form; I believe all those who have given the matter any attention will agree that a smaller package would be more serviceable in many ways. The half barrel has been tested and so far as I have known with much satisfaction. My own experience has been strongly in favor of the half barrel package. It is handled more easily and there is less danger of heating in the fruit. But these half barrels should be constructed so that in rolling the weight would come entirely upon the top and bottom hoops. For this purpose the Tomlinson package is superior in my estimation to anything I have seen, there being no bilge at all. The package should be made in the same way as ordinary cheese boxes.

There is room for some inventive genius to give us a more perfect package than we yet have, and the reward will certainly be a fortune.

Although some improvement has been made by railway and steamship companies in the handling and storing of apples, there is still room for improvement. One of the steamship lines plying between Montreal and Liverpool has, so far as ventilation is concerned, given the best accommodation yet prepared for apple shippers. Upon three of their vessels they have placed fans on deck. These fans are driven by steam for the purpose of driving down through large pipes an atmospheric blast to keep the compartment cool, and by the use of revolving ventilators the air is carried off around the upper part of the compartment. If that company would extend several of these air pipes around the compartment and perforate them where they pass through the bottom the cool air would be better distributed and would reach every part of the compartment. But there is another difficulty we find in most, if not all of the vessels. The space between decks allotted to fruit is too deep, when it takes ten or fifteen tiers of barrels to fill it to the top. Such a pressure is sure to injure the fruit in the lower tiers, and hence we see so many "slack and wet" in the sale lists. Certainly there are other causes for "slack and wet," but this is one that can readily be remedied.

Freight rates by through bills of lading should be considerably reduced, especially where large lots are shipped. Rates the past season were some higher than in former years. Our friends "across the line" had a decided advantage over us in lower rates by special contracts for large shipments.

A much larger trade in general fruits would be carried on with Manitoba and the Territories if rates could be reduced to a reasonable figure. Plums and early as well as late pears, grapes and tomatoes and apples would be shipped in much larger quantities than at present. Fruit cars, well ventilated should be provided similar to those supplied by the Grand Trunk in some sections, and the Canadian Pacific should convey such freight with more despatch than they do.

Express companies' charges are so excessive that only a very limited trade can be carried on at present, and ordinary freight is so slow and uncertain going to the far west that perishable goods such as I refer to could not be sent. At Portage La Prairie the past season I made a note of the following charges by the C. P. Ry., which will give an idea of what a luxury consumers must consider the products of our orchards and gardens when they are willing to pay a price to cover first cost, charges and profits. Grapes per

100 lbs. from Toronto, \$3.25 ; tomatoes 73 cents per basket ; peaches, plums, pears and gooseberries 73 cents per basket. In other words, the charges are about as much as the original cost. Crab apples, which can be purchased for about \$2 per barrel in Toronto, are charged \$5.50 per bbl. for carriage on arrival. If these goods were sent by ordinary freight it would take about an average of fully twelve days to reach the Portage or Winnipeg.

It cannot be expected that much change will be made in rates west until competition is fully established with the C. P. R. Such competition as there now is gives an advantage to our American friends, who are enabled by lower rates to place fruit in Winnipeg for less money than we can. I am well aware that both our railway systems deny that such a state of affairs exist, and they quote the inter-State law to clinch this contention. But the fact remains all the same, and fruit-growers and shippers of Ontario have had thus far to "grin and bear it." If these railway and steamship companies would encourage fruit-growers and shippers by providing more perfect accommodation, better handling and storing of goods and guaranteed bills of lading to all points at a lower average freight rate, we would have no trouble in opening out new markets, which would necessitate the planting of much larger areas to orchard.

It is time to do something, if possible, to prevent many mixed brands of apples and badly packed as well as worthless seedlings and others from passing forward into British and other markets as the produce of Canada. Our good name suffers in this way, and unless a stop is put to it, fruit shippers and growers as well, will be looked upon as sharers. Buyers in the markets are becoming suspicious already, and those who handle only choice brands feel that the injustice is affecting them in prices by gaining a generally bad name for our country. It has been suggested that an inspector, whose duty it would be to examine and mark every barrel upon its merits, would remedy the evil. It would also be necessary to hold the packers responsible for their work, as well as the grower for the condition of the fruit in the orchard, for that condition has much to do with its carrying and keeping qualities. A neglected orchard cannot produce fruit of as good points in flavor, growth, shipping and keeping qualities as an orchard that is well cared for. The price, therefore, to the grower should be subject to these conditions. Such an inspector would also correct the present very loose system of naming. I trust this matter will receive special attention at an early day in our discussions, so that some improvement may be made, and our good name as a fruit producing country be honestly preserved.

The present system of judging fruits at our exhibitions, if indeed I should dignify it as a system at all, requires a radical change. I believe we should, as an association, frame a code of rules for judging upon points. Many an exhibitor at our leading exhibitions thinks that judges take an unwarrantable liberty when they taste often varieties that are easily distinguished at sight ; but I ask is there not naturally often an important difference between two specimens of the same kind that have been grown under different circumstances, and is it not a most important part of a judge's duty to award the prize to the best ? I am a thorough believer in the flavor test of fruits. If we are to occupy the place of educators in this matter we must not pass over the fruit tables too hurriedly, judging by the eye instead of by points of merit. In other departments at our exhibitions advancement is being made. Why not in this ? In every case the points awarded by judges should be placed upon the plate or collection of fruit so that exhibitors may profit.

In the near future our association should follow the good example set by the American Pomological Society in revising our entire fruit lists for the purpose of simplifying nomenclature.

Experiments have been tried by many for the past two years for the purpose of destroying the codling moth. Various remedies have been employed, but up to the present I have not been convinced that any of them has accomplished the desired end so well as Paris green. Although some scientific men denounce this remedy as a fraud or useless, those who have given it a practical, persistent trial have over and over reported strongly in its favor. I am fully satisfied after several years of careful experiment and observations that the curculio has been actually destroyed by the persistent use of

this poison. At first my opinion was that the insect was not killed, but that possibly some odor which we could not discover, but which was distasteful to the curculio drove it away. Now, however, I am satisfied that the curculio feeds liberally not upon the juices of the young plums alone, but also upon cherries and early apples. Anyone can be satisfied of this by placing a few insects in a glass case with specimens of Duchess of Oldenburg apple. They will in a few hours eat into the apple. I have often observed small holes eaten into plums and apples which I supposed were caused either by birds or ants, but later experiment and observation convince me beyond a doubt that the "little Turk" has at all events in most instances been the cause. There is no question but the use of Paris green has ridden many sections of this pest, and I hope its use, judiciously, will be continued in the fight with the codling moth.

The orchard planted under directions of a committee of this Association on the Model Farm at Guelph is practically useless for our purposes, owing chiefly to the fact that the grounds selected were not underdrained before planting as we directed. Another should at once be set out under more favorable circumstances.

If we cannot succeed at once in convincing the authorities at the helm of State of the necessity there exists for the introduction of some simple text book on agriculture and horticulture, perhaps they can be induced, as a stepping stone in the right direction, to require that practical horticulture be introduced into all our school grounds. Get the children interested in the trees, shrubs and flowers and they will grow up to bless those who introduced this new era, for such teachings and tastes will have a marked effect for good through after life. While governments are doing so much to advance the interests of other classes in the community surely the tillers of the soil should not be neglected, nor should means be spared to educate the children of this country up to a true appreciation of this most interesting and refining science. I fear there is much in the present educational system that has the effect of drawing our best young men away from farming life, and I do not wonder that leading agriculturists are taking the matter up at institute meetings.

Large quantities of hardwood ashes are being shipped out of this province yearly to be used, after reducing, by fruit growers and nurserymen in the neighboring States. Surely this excellent fertilizer is equally valuable to us. I know nothing better in the spring of the year than the use of unleached ashes sprinkled liberally over the trees of our orchards. Enough will stick in loose bark, mosses and other growth to form a lye with rains and wash the trees completely. Try it and be convinced.

Since our last meeting I had the pleasure of visiting the North-West and British Columbia. In passing through the western or north-western portions of this province, although largely of a rocky nature, I was impressed by the eagerness with which the dwellers there seek for information and assistance in the fruit-growing industry. There are many fertile tracts throughout the District of Algoma, where fruits have been grown. In the Sault Ste. Marie and Bruce Mines sections I observed healthy specimens of Spy, Golden Russet, Ben. Davis and others, mostly in dwarfs. The trees looked healthy and have in several instances borne fruit. The various crabs grow well and produce abundantly, the fruit being exceedingly beautiful in color, and I don't think I ever enjoyed the flavor of a well ripened crab so much as here. I was glad to observe that many are growing apples from seed, and in one orchard at Sault Ste. Marie I observed some fine specimens of fruit of fair quality. Duchess of Oldenburg, Tetofsky and others of this class succeed well. There is an abundance of wild plums, grapes, currants and gooseberries all through the woods. Black currants are magnificent for size of bunch and berry, resembling the black currant to be found so plentifully in the Western prairies, and some specimens I found which had been cultivated for some years were excellent in quality. Passing through the thousands of beautifully wooded islands in the Lake of the Woods, and going up Rainy River we find a large tract of heavy timbered rolling land, resembling the original forests of Western Ontario. I found some very fine specimens of the apple in cultivation in the vicinity of Fort Frances. Among them as fine a specimen of Spy as one could desire. Residents there inform me that they find no trouble in growing many varieties of the apple and pear. From this north to Rat Portage the woods abound with grapes and gooseberries especially.

But when we pass into the great prairie land we cannot indulge even in a hope of fruit growing until the forestry question is settled. And yet I believe there is there, notwithstanding the severity of the winter climate, a certainty of successfully growing some of the early, hardy, large fruits, for the fact of wild specimens of the grape, plum and cherry being found in many sections indicates that by improving these a better selection can be produced, and by the ameliorating influence of forestry others can be introduced with profit. Along the Assiniboine and Red Rivers in Manitoba there are at least three kinds of plums, red, blue and green, the latter resembling the Green Gage both in tree as well as shape of fruit. It will be most interesting to follow the history of that country up to the time when the effects upon fruit trees will be noticeable by the protection and other influences of an extensive planting of such forest trees as will grow easily and rapidly. As that country becomes populated and the lands cultivated, tree growth will be found indispensable in preserving moisture. At present the thick matting of prairie grass suffices, but after a few years of grain cropping it will be found necessary to use manure for the purpose of preserving the present fertility of the soil, and it is just here that large and frequent belts of forest trees will be found of incalculable service to that country. The intelligent and energetic people of that country will not be slow to take up this matter in earnest, and throughout Ontario we must benefit by such example, for we have large areas divested years ago of forest that are becoming less fertile yearly. Forestry will, in my humble judgment, do more for that country than any other influence, or industry, for its influences for good are almost legion. The casual traveller even thinks of it in the monotony of the prairie so thinly dotted with the pioneer settlers. But no one can help feeling impressed with the coming greatness of that country when population pours in. Already—

“ We hear the tread of pioneers,
Of nations yet to be,
The first low wash of waves, where soon
Shall roll a human sea.”

Shelter belts of abele, poplar, soft maple, arbor vitæ and many other trees would be suitable for orchard purposes. In planting there I would have the orchard upon the north of the shelter belt, upon the same principle as that practiced in the State of Maine. In the early history of that State it is said that the Pilgrim Fathers and their descendants were accustomed to plant large orchards in small clearings in the forest on southerly slopes. These orchards flourished and bore fruit abundantly. But as the forest was cleared off the orchards died, and now, instead of planting upon southerly slopes, the successful orchardists select northerly slopes. This coincides with our own experience, namely, that it is not so much the severity of midwinter that kills our trees as the alternate freezing and thawing in spring. By providing a shelter from the rays of the sun the orchards of Maine are noted to-day even for Baldwins as well as other varieties not more hardy and which would not succeed upon southerly slopes. Judging therefore by this experience it seems more reasonable to plant orchards upon the north side of shelter belts. The reasonable conclusion to be drawn from such a method is that the heat of the sun in early spring induces the upward flow of sap, night frosts burst the sap vessels and the tree dies.

Passing through the Rocky Mountains I had no opportunity to examine tree or shrub growth further than what the eye could discern in passing. Indeed the time is so occupied in admiring the grandeur of the scenery that one cannot afford time to contemplate the practical in the way of horticultural specialties. Between the massive forest covered mountains, the headlong rushing rivers and innumerable mountain streams and falls, the scene is even too grand to permit of description by the writer's pen or the painter's brush,

With the odors of the forests,
With the damp and dew of meadows,
With the curling smoke of wigwams,
With the rushing of great rivers,
And their wild reverberations,
As of thunder in the mountains.

British Columbia is certainly a country abounding in mineral and forest wealth. But the day is coming when fruit growers in that province will compete strongly with us in the markets of the North-West. Peach and grape culture can never be carried on successfully along the coast as the nights are too cool to allow proper ripening of these fruits. But along the Fraser river and in many inland valleys and ravines they can surely be grown to perfection. At many of these points I found that melons and tomatoes are grown in perfection, which surely indicates safely that peaches and grapes would succeed.

Apples, pears and plums can be grown wherever sufficient soil is found to plant, and while they attain a much larger size than such fruits do with us and also a fine color, they are much softer and not so marked in flavor, nor do they keep as well. But they can be grown in large quantities and properly packed in small packages would carry well into the British and far eastern markets for late fall and first of winter use. An association similar to ours has been formed in that province whose good work will soon be felt as a power in that favored climate.

I am sure the unanimous sentiment of our association is with them hand and heart.

ALEX. McD. ALLAN.

THE WINTER MEETING.

The Winter Meeting was held in the City Hall, Ottawa, on Wednesday and Thursday, the 8th and 9th of February, 1888.

President Allan being delayed in arriving, the meeting was called to order by the Vice-President, A. M. Smith, Esq., who announced the presence of Messrs. Gibb and Brodie, members of the Montreal Horticultural Society. He sincerely hoped these gentlemen would take an active part in the discussions, as he felt assured the members of the Association could not fail to derive much valuable information from a relation of their experiences in fruit growing.

President A. McD. Allan having now arrived, assumed the chair, and the first topic for discussion was opened by the reading of the following paper by Mr. A. A. Wright, of Renfrew.

EXPERIENCE WITH RUSSIAN AND HARDY NATIVE FRUITS IN THE COLD NORTH.

I regret that owing to circumstances which I shall explain later on, I am not able to give you as definite information as I would like but such as I have I give you. In 1883 I made arrangements with Prof. Budd, of Ames, Iowa, to send me a collection of 200 Russian apple trees one year old from the bud. These came duly to hand and consisted of thirty different varieties, viz., 60, 102, 143, 153, 161, 260, 269, 275, 277, 316, 327, 402, 407, 540, 608, 722, 1260, 2 M., 3 M., 5 M., 8 M., 14 M., 26 M., Yellow Transparent, Russian, Cardinal, Grand Sultan, Belle de Boskoop, Canada Baldwin and five without any name.

As I was President of our local association, I distributed them in groups of five, to as many of our members as cared for them, and the remainder to various friends of horticulture in our immediate vicinity, giving only five to each. In nearly every case the parties desired and obtained five different varieties. This manner of distribution was a great mistake on my part, as you will readily see, for although I kept a carefully preserved list of every tree given to every individual and attached a correctly named label to each and every tree, and gave the strictest injunction that the number or name of each tree should be carefully preserved by them, and that an annual report of their success or failure should be given to me, yet, with very few exceptions, these injunctions were entirely neglected, and all my pains, trouble and expense were of comparatively little value. Had I given each individual five trees, all of one variety, then I would have known just what varieties lived and what ones failed.

For example: Mr. Fraser, according to my record, received one each of Belle de Boskoop, Russian, 275, 327 and 153. Two of these grew and have done exceedingly well, and are now bearing very fine specimens of early fall fruit. Now, the question arises, which two are living? This, we cannot tell, as he apparently made no effort whatever to preserve the numbers given him.

All the other Belle de Boskoops distributed, as well as all the others marked Russian, have failed; hence we have good grounds for believing that the two he has living are two out of the remaining three, 275, 227 and 153, but exactly which two we cannot say. This, you will admit, is not very satisfactory, as it is altogether too indefinite to be of any great value. It is on this account that I cannot speak too positively on some of these fruits.

This much, however, we can say, that from the importation of 1883, as well as those made yearly since that date, we have come to the conclusion that not all the Russian varieties are hardy in the colder sections of the north. That very careful and judicious selections will have to be made, and that on no account should we neglect to make constant selections from amongst our own native seedlings.

We may state, however, that the following are promising varieties :

- 469, Grandmother (Babuschkino).
- 233,
- 153, Transparent Naliv (Skvosnoi naliv).
- 387, Gold Peasant (Dobrui krestianin).
- 236, Antonovka.
- 336, White Transparent (Skvosnoi bielui).
- 164, Heidorn (Polosatoa Heidorna).
- 161, Longfield (Langerfeldskoe).
- 215, Kustoe.
- 413, Cross (Skrijapeli).
- 2 M., Hare Pipka (Saitchia Pipka).
- 2 M., Royal Table (Finstlicher Tafelapfel).

Among the Russians : Switzer or No. 304, 469, 233, 153, 387, a variety marked Anis, 236, 336, 164 and Red Russian. Favorable reports have also been sent in of 2 M., 5 M. and 161, and one favorable report on 215, 413 and 469. The Yellow Transparent having been reported on so frequently as perfectly hardy it is scarcely necessary to mention it here.

I must now also state for your information that our Provincial Association sent me in 1884, for testing on my own grounds, thirty-seven varieties of Russian apples and two Vladimir cherries. On these I can now make the following report : 1st. That the Vladimir cherries are both living but have not yet fruited, but I am in hopes that they may the coming season ; they are apparently quite hardy. 2nd. The following were the varieties of apples sent : 160, 580, 164, 3278, 317, 97, 355, 153, 387, 233, 240, 171, 369, 970, 248, 384, 398, 909, 204, 157, 934, 00, 285, 122, 575, 352, 244, 1227, 153, 978, 238, 219, 153, 352, 222, with Peter the Great, and Red Russian. Very few of these are promising ; any that are, will be found in the list already given.

I shall now merely add that I wrote Prof. Budd stating that very few of the Russians sent had proved hardy with me ; and, in reply, he stated that he expected nothing else, that he had purposely sent mainly long keeping varieties instead of selecting only from the hardest, in the hopes that some of them would prove hardy enough for our climate, and if they did, we would then have a valuable acquisition to our list of fruits. It is only fair to mention this lest some of our friends should get discouraged and refrain from testing any of these imported varieties. This, we should not do, but on the contrary, should be guided by the wise Scriptural injunction, "To try all things, and hold fast to that which is good."

Mr. GIBB (Abbotsford, P.Q.)—I am afraid there has been a good deal of misunderstanding both as regards names of varieties and the propagation of the same variety under different names. There is in reality no such apple as the Red Russian, and there are several of which I could not fix the numbers. I have always been opposed to the system of propagating by numbers ; 7 is supposed to be 9 or 1, or something of that kind ; 143 is 608, and so on. Then as to the hardiness of these. Of course the collection sent by Dr. Regel was received by him from ten sources in Russia, and also from Sweden and Germany, so that it was really a collection of German and Polish fruits and fruit from the older districts. If you take the District of Kasan, where the temperature is 9 below zero, and compare it with Ottawa,—which, I am told, is 3 degrees colder than Montreal, and which has less shelter than we have there—taking Ottawa at $16\frac{1}{2}$, there is a drop of $7\frac{1}{2}$ in favour of Ottawa. It really represents something more than that, because the Observatory at Kasan is sheltered. So, then, there is $7\frac{1}{2}$ degrees of difference between three months at Kasan, where orcharding is the great business of the community, a the city of Ottawa. Another thing is that no such difficulties exist here. I have j received the last bulletin of the Experimental Station at Minneapolis. There, desiring

try the Russians at their worst, they planted them in good, rich soil, in a deep, open prairie exposure. Out of forty-three not one stood. I may say that in good soil they grow to twenty-three and twenty-six inches; but, however, the winter of 1886-7 was exceptionally severe, and not one of them started. We can test the hardiness of the greater proportion of our apples by comparison with the Duchess. I have seventy-five varieties of these Russian and German apples, and a number of the Germans seem not specially hardy, but with me the Russians are models of hardiness. I am not speaking for the west, nor for a climate colder than my own, but where I have a full exposure I find them very much hardier than anything like Fameuse. Then, when you come to ask me about the fruit, I speak of course with a good deal of hesitation, because Longfield and Yellow Transparent are the only ones I have fruited in any quantity. Of the six I think most of, I should take for the first Yellow Transparent, or Charlottenthaler. The Yellow Transparent is not one of those that proved hardy, but it is sometimes as early as the 20th of July, and usually the 1st of August. An apple I think a good deal of from what I have seen of it in the west—not from my own orchard, but I saw it in a number of orchards in Wisconsin—is the Golden White. Another is that known as the Raspberry, an apple below the medium size, almost small, but a very bright red and of very fine quality. The season of ripening is about that of the Early Joe, or a little later. Then Titovka has done very well. I have seen it in the west and fruited a few specimens from my own trees, but was away and did not see them. It has a capital record. Of Longfield I had, I suppose, last year two bushels. It is a strong grower and a very rambling, almost creeping tree, a heavy bearer and the fruit of good quality. Arabka (of Ellwanger and Barry) is not an apple of fine quality, but it is fair, good enough for most markets, and a large, handsome, productive apple, peculiarly colored. In regard to the name of these fruits I hope before very long to be able to place in your hands lists. It appeared in the last list of the American Pomological Society, and ought to have been in the report of the United States Department. I have, in my own orchard, the same name from several sources in Russia, planted side by side on the same day, and I hope to be able to solve the difficulties here presented.

Mr. WRIGHT.—I would not like anyone to become discouraged in regard to Russians on account of anything I have said, because it is very much colder where I live than at Mr. Gibb's place of residence. With us the thermometer goes down to 40° below zero, and, besides, in an inland part of the country, such as where I live, the frost comes very much earlier, and it catches the buds when they are quite tender. I may say, in fact, that anything that will grow with me will grow anywhere. I find the Yellow Transparent the hardiest apple I have, with the exception, perhaps, of the Peach of Montreal. I find it harder than the Duchess.

Mr. BRODIE (Montreal).—Next to the Duchess I should consider the Golden White, of which Mr. Gibb has spoken, and the Charlottenthaler, which are very much alike. I have not put any of the Longfields on the market yet, and, with me, Titovka has not borne or made very good growth. I have had the Golden White seven years planted and it has yielded apples almost the size of Alexanders, better in quality, but not keeping so well as the Alexander. It comes in season just after the Duchess. It is not as firm an apple as the Alexander, though Dr. Hoskins says he can keep it on into the winter, but they ripen earlier with me than with the doctor in Vermont.

Mr. MARKWELL (Ottawa).—My experience is that in this section of the country the Duchess grows better than any other variety, and is the best for the market.

The PRESIDENT.—Do you find them different in flavor, or keeping quality and color?

Mr. MARKWELL.—I usually find them better in color and size, and I think in keeping qualities also. They seem to be harder.

Mr. JOHNSTON (Dominion Statistician).—I belong to Nova Scotia, and am interested in orchards. I have one of about thirty acres. The names that are mentioned here are not those of kinds we use there to any extent. I do not know that my experience would be very valuable, for I have not taken much active, personal interest in the matter. My more particular reason for being here to-day is to learn from the members of the Association what is being done in the line of apples, being from the nature

of my position in the Civil Service, interested in knowing that which is of importance to the country at large. In examining these matters I find that since Confederation there has been a very large increase in the export of apples to England and the United States. In Nova Scotia especially we have cultivated the English market very much; and it seems to me that anything that is done to develop apple growing must be of great benefit to the country at large. I do not know, indeed, that we have any line in which there is more promise than in apple growing. I find that in 1868 we sent about \$14,000 worth of apples to England; we now send \$700,000 worth. At the beginning of Confederation we sent to the United States \$35,000, as compared with \$400,000 worth now. During the whole period we have sent to England over \$4,000,000 worth; and to the United States \$1,250,000 worth, not mentioning other places. It seems to me, therefore, that from an association such as this, which is developing the kinds of fruit best adapted for home consumption and the foreign markets, I may not only gain some little information which I can put to practical use in my own orchard, but may also acquire knowledge which I may be enabled in various ways to distribute to different points, so that greater interest may be taken in fruit growing.

Mr. HILLBORN (Dominion Experimental Farm).—My experience in this section of the country is not yet very large, as I have only been here a year. We have planted about 175 varieties, but have not had time, of course, to know what they will do, as they were only planted last spring.

Mr. WYLIE (Carleton Place).—Being only an amateur, I have not much to say before a society like this, consisting of old and experienced fruit growers. I have been trying several kinds of apples in my garden, and I find any of these Russian varieties quite hardy as far as I have tested them. I have the Duchess and the Yellow Transparent, which I have only fruited one year, and also the Tetofsky. I have also the Montreal Peach, and some other kinds, which I have not yet fruited.

Mr. WHILLAMS (Smith's Falls).—I, like the gentleman who preceded me, am only an amateur and beginner, and came here more to receive information than anything else. I have experienced difficulty in getting fruit sufficiently hardy to stand the climate of eastern Ontario, and which will keep in the winter. I recently came across a seedling apple which I thought worthy of being presented to the Society. The tree from which it was produced was about thirty years old, and was grown in a field in the vicinity of Brockville. The seedling is perfectly hardy, standing in a cold position, and the fruit is as you see it. It does not spot, and I think it would prove a good shipper; the skin is rather thick. I may say that the specimens presented are not a fair sample of the apple; this year the apples are not their usual size, and when I spoke to the party who had them about presenting specimens here, I found they had been thrown into a box in the cellar, and these are only culls, not first class samples—below the average. I think in an ordinary year samples could be selected fully one-half larger than these. The apple is very nicely flavored, and it seems to me it would be very valuable as an addition to the list, the more so as it keeps very well.

The SECRETARY.—How long does it keep?

Mr. WHILLAMS.—I should say until April, anyway. The samples were just taken out of a box in the cellar.

The PRESIDENT.—Grown under hard circumstances?

Mr. WHILLAMS.—Yes; as hard as possible; the tree is fully exposed both to the west and north, and little cared for; the farmer who has it does not value it very highly—he thinks a good deal of the Peach apple.

The PRESIDENT.—Do you know how the mercury averages?

Mr. WHILLAMS.—Two weeks ago in our vicinity it was 40 below zero, and I think it is a more trying climate than that either north or south of us. When you get to Brockville there is the valley of the St. Lawrence, and here you have the valley of the Ottawa. The climatic conditions there are sufficiently severe to test any apple; I believe an apple that will stand the climate there will stand anywhere.

The PRESIDENT.—Have you tested any of the varieties spoken of here to-day?

Mr. WHILLAMS.—Only the Duchess and a few of the better known varieties. With

that exception and the Golden Russet, we have hardly any winter apple—we look upon the Wealthy more as a fall apple. The Golden Russet does not bear very well, but it will live.

Mr. BUCKE.—Did you say you got the tree or the seedling from Brockville?

Mr. WHILLAMS.—The apple was brought from about ten miles from Brockville, and the seeds planted, and from the seeds the tree was produced. This is one of the trees; the other is a very good apple too, but it killed itself bearing in two years.

Mr. G. C. CASTON (Craighurst).—I do not belong to this part of the country, but where I live we have a pretty cold climate, sometimes as low as 35 below zero, though I don't think we ever reach 40. But there, as well as in many other parts of the country sixty miles north of us, many varieties have been tried which we cannot do anything with. I am considerably interested in these Russian varieties, and I hope we may get some of them that will prove as hardy as the Duchess and good keepers. But the trouble with them is that they are fall apples and not long keepers. I was going to ask Mr. Gibb for a list of the longest keepers among the Russians he has tested. If we can get an apple with the good qualities of the Duchess, early bearing and hardiness, and one that will keep until spring, it will be the most profitable apple we can get hold of. I don't think it is well to have too many fall apples in our part of the country, for they are no use there. What we want is an early apple and a long keeper, and if Mr. Gibb or any other gentleman can tell us of the longest keepers among these hardy Russians it will prove of interest. I think, in a good many parts of the country, it would be a good idea to raise seedlings. I find many varieties that will not thrive by planting a tree from the nursery will thrive if top-grafted upon another variety. If you can take some hardy seedling and graft them on, I think they would yield finer specimens of fruit in that way than they would on their own stem. I think that an apple to stand the climate in the colder parts of Canada will have to be very much like the Duchess. I think there is a good deal in the texture of the wood; it requires to be like beach, close and hard in the grain and smooth in the bark, which is the case with the Duchess.

Mr. WRIGHT.—I wish to draw attention to the remark about top-grafting—that a variety which, when planted under ordinary circumstances, will not grow, may be top-grafted upon a hardy seedling and will then grow. That is also my experience.

Mr. GIBB.—If I had been asked the question last week, "Are there any apples that will prove late keepers," I should have said "Yes." After attending the meeting at Ottawa I should be inclined to say "No." When you come to a climate where the summer heat is much greater than here, the apples which will be more or less keepers here will not be keepers there. The one thing I am not positive of—and, therefore, I would not make a statement—is how long these apples would keep in this country. There is one thing which, I think, might be done in some parts of the country as it is in Russia. Some of their apples are late, because they are picked just before they are ripe and shipped to market, and in that way they are keepers. Of course, of the apples I have not fruited we cannot speak.

Mr. McNICHOLL (Ottawa).—I have nothing to advance in this matter of apples, not having had any experience myself with them, but from observation I can endorse what has been said in regard to the Duchess. I was surprised on coming to Ottawa to see the fine appearance of the Duchess here. I had seen very attractive specimens before coming here, but I think what I have seen here are even more attractive than those in the west. I think anything that will equal the Duchess in hardiness and quality will do first rate in this part of the country, or this part of eastern Canada. It is very attractive and the flavor is very good, and I think if the fruit growers can, by their exertions, develop an apple superior to it they will be conferring a great boon upon Canada.

Mr. BUCKE.—We have with us here one of the first Directors of the Fruit Growers' Association, Dr. Hurlburt, who can, no doubt, give us some information.

Dr. HURLBURT (Ottawa).—I have been very much interested in what Mr. Gibb has said in regard to these hardy Russian fruits, and was very much pleased when I heard he had made one or two trips to Russia, because I found, when in Europe a good many years ago, that in some of the northern latitudes there were not only apples but other varieties of fruit which might be cultivated to advantage in Canada. Of the fruits to which Mr.

Gibb referred, however, I have had no personal experience, and I therefore prefer not to give any opinion upon them At some future stage of the meeting if any subject with which I am familiar comes up I shall be very glad to say a few words.

Mr. GREENFIELD (Ottawa).—I am happy to say that since the last meeting here there has been a great change and development in fruit growing in the Ottawa valley ; if we only continue for a few years we shall be quite independent and have plenty of fruit of our own. The greatest trouble we had was to find fruits that would stand the climate, but at last the Tetofsky came in, and it has proved very valuable for this climate ; it is hardy and early, coming in about ten days before the Duchess, and it is a good bearer. The Duchess, too, we find an excellent apple, and one that stands the climate well, and then, again, we have the Wealthy. I have grafted several trees and I find that they bear a great deal better than the standard trees, and yield finer fruit. I have tried St. Lawrence, Red Astrachan, and Fameuse, and several others, but none of them will stand the climate. They may stand one or two years, but will eventually die out. I hope further progress will be made and that we shall soon have some good fruit in this country.

Dr. HURLBURT.—I have had some experience in growing hardy apples. My experience has been that it is not so much the fruit as the tree. You get a good standard tree, perhaps one that has grown up in the country, or that has been got from a colder climate, and I think the fruit is as safe as it was further west. I have had experience from along the St. Lawrence, south of this, away to Hamilton. There are several varieties of trees which everyone who has cultivated apple trees knows will grow better in a cold climate and produce an apple of much better flavor than they would further south. I often found this through the colder latitudes in the northern part of Europe. I have found this to be the case with an apple we call the Bitter-Sweet, which, especially for cooking, has a much better flavor here than in Western Canada or the Northern States. My experience has been that it is far better to have dwarf trees, and have them sheltered by other trees. I believe if these hardier varieties could be introduced and cultivated here, and have them well sheltered, and, as far as possible, dwarf trees, that a variety could be cultivated here equal to any part of Ontario.

Mr. BRODIE.—How did you protect your dwarf trees from being crushed down by the snow ; mine were crushed all to pieces.

Dr. HURLBURT.—Well, perhaps mine are sheltered from the snow ; I have no difficulty that way ; there were no snow banks around me.

The PRESIDENT.—Perhaps it was to the driving of the snow to which Mr. Brodie referred.

Mr. BRODIE.—Of course we have a good deal of snow, though I don't know that we have any more than Ottawa ; but generally around our line fences, especially if we have a wind-break, it gathers. I have often seen it on the level two feet deep across a farm two acres in width. Down in Quebec I am sure it is two feet on the level where there are no trees at all, you can only see the top of the fences, so our dwarf trees would be covered completely in that part of the country.

Dr. HURLBURT.—Snow covering a tree will not injure it ; it will protect it. Perhaps in the places Mr. Brodie refers to the wind is not broken by woods or anything else. I find that if you pack snow around the trees, and it remains there, it is a protection to the tree, not an injury.

Mr. BRODIE—I find we have to dig out our trees ; as the snow thaws it gets heavier, and the branches break right down.

A MEMBER.—I happened to give an agent travelling around last year an order for a few dwarf trees, and he told me that dwarfs did not live long. Now, I would like to know, if there is any truth in that ?

The PRESIDENT.—I am not aware that there is any truth in it at all.

The SECRETARY.—I suppose you mean dwarf apples.

The MEMBER.—Yes.

Mr. BUCKE.—We are expecting great things from the Experimental Farm. They are making collections of fruits and trees, and in a few years we shall have valuable knowledge. But there is one thing attention should first be called to, and that is a collection of seedling apples grown in the parts around here, down the Ottawa River and

the St. Lawrence. Some of our finest apples have been originated at Lyn, near Brockville, and I think the Experimental Farm will do a good work by making a collection of these seedlings. In regard to the snow, I think there is no danger so long as there is no crust upon the snow; if there is, as the snow comes down, it breaks the trees. Sometimes in setting small trees, people stand something around to afford them protection from the snow until they are high enough, but as a rule the branches of dwarf plants are as high as the snow, and therefore are not badly broken, though very small bushes such as gooseberries and currants are often badly damaged by snow.

The PRESIDENT.—I agree with Mr. Bucke that a collection of the best known seedling apples from all over the country would be very valuable; there is no doubt many of our seedlings will hereafter prove our best fruit.

Mr. DEMPSEY.—With respect to dwarf apple trees, it depends to a great extent what they are dwarfed upon. The roots of some dwarf trees, such as the French Paradise, which is generally the produce from a dwarf tree, are fibrous, and if they are not protected by the snow they would freeze to death readily, all being near the surface. The same variety suffer wonderfully if they are planted on a very dry spot. The wood of that variety is spongy in nature, and the tree itself is really not hardy, although we have quite trees of them, but I don't think a tree from that stock would be satisfactory. Again, there are varieties of crab that grow from cuttings, which strike root readily, which produce hardy stock, which are also fibrous rooted. There is the English Paradise, that is used largely; we have trees in our ground; we imported some trees from England, and they were all worked on this English Paradise. We find they also produce a little fruit, smaller than the French Paradise, but they are stronger growers, and the fruit does not come into bearing quite so soon. That might be hardy here, but it occurs to me that dwarf apples would not be satisfactory in this climate at all. I would advise you to try seedlings extensively, even if you have to take a tender variety, and protect until you get fruit; fruit from this plant, produce fruit or trees, from the seed of that fruit, and when they bear fruit take the first fruits again, and continue on through several generations. Those of you who have read the history of *Dems*, of Belgium will readily see that that is the way he produced so many fine pears, valuable in that country and in France. I think he accomplished more than any man who ever lived in France or Belgium in that way.

Mr. HILLBORN.—In regard to the collection of seedlings, I may say that at the Experimental Farm we have sent as far as we could to get apples, and have got apples.

Mr. BRODIE.—I would recommend that the members of this association who live further north, if they find out any new seedlings should send samples from them to the Experimental Farm to be tested. At one of the Exhibitions of the Fruit Growers Association of Quebec we had on our tables samples of seventy-five seedlings grown in Chateauguay County and on the Islands of Montreal, and among them were some worthy of propagation. If we had then had an experimental station to send them to we could have tried them.

The SECRETARY.—We have several very worthy seedlings already; Scott's Winter is one that recommends itself very highly, a seedling originated in Vermont. And that large Baxter's Red, which seems to be a very fine showy apple, and a fine keeper, is also a Canadian seedling. Then we have Mr. Dempsey's seedling pear and a seedling pear sent to me from near Toronto and numerous others; I think we have enough to make a collection already.

THE HARDY APPLES OF VERMONT.

The paper on this subject was read by T. H. Hoskins, M.D., of Vermont.

I note that I am put upon the programme of this meeting for a paper on the "Hardy Fruits of Vermont." Hardy tree fruits would be more correct; but when I came to consider the subject, it was manifest to me at once that, with the exception of our native plums, in which little selection has yet been exercised, and no notable seedlings produced and propagated, we have no entirely hardy tree fruits but apples, originating

in this State, which have become known to me. Some good grapes have been originated, notably the Vergennes. There are also several desirable pears and plums of Vermont origin, which are sufficiently hardy for the Champlain islands, and the southern part of the State. The best of these pears, known to me, are the Grand Isle, the Macomber, and the Dr. Hoskins—all from the farm of Benj. Macomber, in the Town Island, and county of Grand Isle; all quite as hardy as Flemish Beauty; but none of them sufficiently "iron-clad" for the mountain regions, or the Memphremagog valley. The same may be said of the Green Gage seedling plum, from the same farm—a plum of medium size, productive and of high quality. As none of these have yet been propagated to any great extent by nurserymen they are not easy to get, though I believe they are occasionally to be had of L. M. Macomber, who carries on a small nursery North Ferrisburg, Vt., and is a son of the originator. The Grand Isle pear is described in Downing's *Fruits and Fruit Trees of America*, and the other Macomber seedlings have been recently figured and described in the *Rural New Yorker* newspaper. They would probably be well adapted to all parts of the Dominion where the Flemish Beauty does well. The one which the originator has complimented me by affixing my name to, is a seedling of the last named sort—as large, as good, and I believe as productive as its parent, but not quite so elegant in appearance. It has, however, shown no signs of spotting or cracking, and may be preferred on that account.

There are, in Vermont, a number of native apples belonging to the Champlain Valley, and doing well there and southward, which would be worth trying in the milder parts of the Dominion. Among these I might name the Northern Sweet, the Bottle Greening, the Tinmouth, the Burlington Pippin, the Hubbardton Pippin, Jewett's Best, the Landon, and the Winter Pippin of Vermont. Nearly all of these equal, or nearly equal Fameuse in hardiness, are prolific, and good market and dessert sorts. Their descriptions can be found in Downing and Thomas. But the apple widely grown and very popular in the State, under the name of Champlain, or Paper Skin, is *not* a Vermont apple, being identical with the Summer Pippin of the books.

When we come to absolutely "iron-clad" apples, capable of enduring with little or no injury a temperature of from 30 to 40 degrees below zero—comparable, for instance, with Oldenburgh, and many other Russian sorts—neither Vermont, nor indeed all New England, has many kinds to show. The nearest to eligibility for the iron-clad list that I am acquainted with is the Bethel of Vermont, a native of the valley of the White River, a Vermont tributary of the Connecticut. This apple has proved with me as hardy as any Russian, Oldenburgh not excepted—a vigorous, healthy tree, sound and uninjured in trunk and limb after repeated test winters. The fruit is as good, as large, as long keeping, and nearly as handsome (a rather duller red) as the Baldwin. But as there is "an out in everything," the Bethel does not escape. It is a very tardy bearer—as much so as Northern Spy. Next to Bethel in merit, though considerably smaller, is Scott's Winter, without the Bethel's fault, being a prolific bearer quite young. These varieties are the only iron-clads, which are also long keepers, that I have found, in testing some 300 varieties of American apples. With the Wealthy, they will give the grower apples almost, if not quite, till apples come again. I recommend them for trial in the severer parts of the Dominion. I may add that my experience with the Wealthy for sixteen years makes me fear that, though hardy in the top, it is likely to suffer in the trunk, like the Baldwin; and in order to get long-lived trees of the Wealthy, iron-clad Russian stocks, like Oldenburgh and Tetofsky, should be planted, and grafted in the limbs when five or six years old. Those who now have (or are making) large orchards of Wealthy, would do well to act on this hint in all future plantings. The only alternative is very low branching, with its inconveniences.

Mr. FAWCETT.—I sent to Dr. Hoskin for some of his Scott's Winter. The trees he sent me were well grown, but here, so far as I know—and I planted some myself, and some other gentlemen around—they everyone were killed the first or second winter. I don't know whose fault it was.

Mr. GIBB—I have a tree of it, and it is my best winter apple. It is only of medium size, sometimes below, and usually pretty well colored, but it is an acid apple. As a long keeper I have nothing to equal it taken all in all. In Grand Isle, which Dr. Hoskins speaks of, and which is a very short distance from the land, you can see beautiful specimens of trees. My experience with the Wealthy is not quite the same as Dr. Hoskins'. I find the Wealthy overbears. I have lost no trees of Wealthy yet. I have thirty-six in my orchard, eighteen of which were planted eleven years ago, and the remainder nine years ago. So I have fairly old trees, and it has been fruited for a few years back very heavily, and suffer from exhaustion by overbearing.

Mr. WRIGHT.—I have Scott's Winter from Dr. Hoskins, and have had no trouble with it at all; five trees I had were very hardy, and the fruit of a beautiful color, and with good keeping qualities.

BEST FIVE VARIETIES OF APPLES FOR CARLETON COUNTY.

Mr. WRIGHT.—Speaking on this question I should say first and foremost is the Yellow Transparent, the earliest ripener we have. Then the Duchess of Oldenburg, Alexander, Scott's Winter and the Wealthy. I would not have Tetofsky; Yellow Transparent is earlier and the fruit finer, and it does not drop fruit as the Tetofsky does. I would like to add a sixth, the Peach of Montreal.

Dr. HURLBURT.—I would suggest that gentlemen who have hardy trees in the colder parts of Canada should send in their list, and let the selection be made from these by a committee. I have no doubt Mr. Gibb has many varieties that would stand the climate here and produce well, and perhaps some other gentlemen have.

Mr. BUCKE.—The Peach and Alexander both blight very badly about Ottawa, and would not do at all.

Mr. BRODIE (Montreal).—The Montreal Peach is reckoned one of the hardest with us, but the Alexander does blight badly. Last season, however, I saw nice Montreal Peach apples selling for two dollars, while you could get from three to four dollars for the Alexander. That is grown in the immediate vicinity of Montreal, but when they are from the West they are a little on the green side in the picking. As for blight, I have not noticed it at all in the Peach. I would recommend to plant sparingly of it, but would advise amateurs to have a few trees for their own use; not for profit.

Mr. A. M. SMITH.—I like the idea suggested by Dr. Hurlburt, of forming a committee. I recently attended a Horticultural meeting in New York State, and there they have a committee from each county to report not only on the production of fruit, but of the different varieties adapted to each locality. I think we should have a committee from each of our agricultural districts here, to send into the Secretary a list of the varieties best adapted to their respective districts; and that these committees should report at the Annual Meeting, and their report be embodied in the Report of the Association. I think this would be of great advantage to the country at large.

The PRESIDENT.—This matter was referred to the entire Association a few years ago, and each director was supposed to get a list of the varieties of apples, pears, plums and grapes grown in his own district, and mark with a star those varieties possessed of great hardiness or other valuable qualities. I know that a number of the districts were not reported upon, and I think it would be well if the reports were continued periodically; because newer varieties of more value are coming in from time to time to take the place of others.

Mr. BUCKE.—The report has been in the Report of the Association two years running. I think in Michigan it is kept up almost every year, and I think with you that it should be changed from time to time. If you go back three or four years you will find in the report the list for all the counties in Canada; I got up the list for this county.

DR. HURLBURT.—I would suggest that the seedlings should not be forgotten. I find in this region that for cooking purposes they are in many instances preferable to

cultivated fruits. Years ago we drew off lines in the country, and put down the varieties of fruit that were found by growers to be more successful within those limits. The divisions were south of the Great Western Railway, north of that as far as Toronto, and then east of Toronto. We had not at that time any fruit growers east of Toronto, so that the western part of Ontario was divided off in that way, and certain fruits recommended as being more successful. I think that system ought to be carried out in reference to the whole country.

The PRESIDENT.—My experience in preparing a table of that description is this. I went into the matter very carefully in the county I represented—went over the county two years attending exhibitions, and even township shows ; and getting the evidence of the growers in every particular township in the three counties. I went into it very minutely, and I found I could make a report for each county, but even the report of the county I might have divided ; for I found certain varieties succeeded in one part of it which would not in another. As a general rule, however, a report of this kind can be confined to each county, and if once properly got up it is very easy to continue it from year to year. I suggested once that the report should be made afresh every second year.

Mr. BUCKE.—I objected to the Montreal Peach and the Alexander. I merely meant that if people set out those two varieties they would not be very successful. We all know, as has been said, that the soil has a good deal to do with the hardiness of trees. Sometimes just across the road apples and grapes will succeed when on this side of it they will not. It is not so much the climate as the soil and exposure ; and it is therefore very difficult to give a list of fruit that will succeed anywhere in any particular section.

Mr. DEMPSEY.—I am from the county of Hastings which, as you are aware, extends to about the North Pole. There is nothing settled back of Hastings that amounts to anything, and it includes the most severe climate that we can expect to grow fruit in. I find that it is next to impossible to prepare a list for that section of the country.

Mr. GIBB.—The conditions of Montreal and Ottawa are about the same, and I will give you what I find most profitable in my own orchard : Yellow Transparent, Duchess, Red Astrachan, Wealthy and Haas. That is simply as a question of profit.

RASPBERRY CULTURE IN THE OTTAWA VALLEY.

P. E. Bucke, Esq., of Ottawa, read a paper on this subject as follows :

I have been requested to introduce the subject of Raspberry Culture in the Ottawa Valley, and though I do not know that I can throw any new light on it, yet, if I can in any way stimulate or assist in the culture of this delicious fruit, my humble efforts will not be in vain.

The raspberry mingles its first ripe berries with those of the late strawberry, so closely do their seasons run one into the other. To my taste the raspberry is the most delicious of all the small fruits. If it were the earliest to ripen, or matured at the same time as the strawberry, it is believed very few of the latter would be exposed for sale in competition with this queen of berries. An early fruit, the "first fruit" of the year must always claim our appreciation, after a partial suspension from fresh grown products from Pomona's apron. Others appear to appreciate the raspberry fully as well as I do myself, as it always brings a higher price in the market than its earlier ripening competitor.

The red raspberry prefers a cool, moist soil, deep and well enriched. The preparation of the bed must be attended to before the plants are set, as little can be done to the ground beyond lightly forking over the surface when once the canes are planted.

If one raises his own plants it will be found best to set in June or July the young suckers, which are produced during those months when they have grown from four to six inches high. These are transplanted like young cabbages, and form excellent bearing canes the following year. Everyone knows who has tried it that late autumn and spring

planting of old canes, cutting them back from four to six inches, does not result in a good plant the first bearing season. The canes are branchy, and as a rule not very strong. But by the system of early moving young green plants, a good cane is obtained ; and consequently the season following gives an excellent supply of fruit ; thus gaining almost two years on the old system. I would recommend those who have plants of their own to try it. It is not improbable such is the perfection arrived at in sending out plants by our nurserymen, that green shoots may be obtained from a distance as easily as young cabbages or tomatoes.

In the ordinary method of planting the raspberry, the plants should be raised in the autumn and healed in but planted out in the spring. Taking them up in the fall retards early growth ; consequently they start with more vigor if the young shoots have not begun to grow before the plants are put in their final position. If they are left standing in their original bed they will make a few inches of growth under ground almost as soon as the frost leaves the soil.

Plants are to be set in rows, six feet apart, the plants to be two feet distant in the row ; but may be allowed to thicken up a little in the rows afterwards.

For a general crop the Cuthbert is decidedly the best variety ; but as its fruit ripens late a few rows of Turner or some other earlier ripening variety may be grown ; say in proportion of one to eight. The Cuthbert is very reliable ; the canes are hardy ; its fruit is firm, plentiful, rich and attractive. In color it is bright, and the flavor is everything that can be desired. On the whole, the Cuthbert, or Queen of the Market, as it is sometimes called, is the most profitable.

In this climate the raspberry requires protection, the same as the grape, during our cold winters. They come under the head of the "half hardy" plants. It is believed western growers would derive ample remuneration for all their trouble if they attended more to defeating the ends of Jack Frost by covering their bushes during their season of rest. My plan of protection is to bend down the canes so that the tops of three or four stools meet across the rows ; then with a piece of sod cut 8x10 inches, and two or three thick ; lay it grass side downwards on the spot where the plants cross. The mulch for the following spring is then thrown on the bent canes. This may be of long strawy manure, corn stalks, tomato or potato tops, or anything that will keep off the sun and will not break down the stems. This system of protection will also arrest the snow and keep it from being blown away by high winds. The bending of the canes should be done as much as possible during soft, damp weather in the autumn. When the atmosphere is moist the canes will be found more pliable, and not so likely to crack or break. A sod alone, where the snow lies deep is often sufficient protection, but a coarse litter of long manure makes it much more effective. This all sounds like a great deal of trouble, but it really takes very little time, and the labor is well repaid by an increased crop the following season. Shaffer's Colossal, one of the very best of the somewhat new varieties, is unfortunately too strong in the canes to permit of its being thoroughly protected, as it is difficult to get it into a sufficient recumbent position. This difficulty also exists with the blackberry.

In order to have such canes as can be properly treated, we do not here, as in the west, pinch the young wood to make it stocky and branchy, but rather remove the side shoots to allow the plant to grow long and pliant, so as to admit of proper winter treatment. It must be borne in mind that the fruit of the raspberry, like the grape, is produced from dormant eyes, which push in the spring, so that all fruit is produced on the young green wood grown during the present year of fruiting from last year's canes. I tried a little experiment last autumn by laying down some plants in September, whilst leaves were still fresh and green on them. The plants were very limber and I found no difficulty in keeping them flat on the ground with a few light sticks. Whether their horizontal position at so early a date will be found injurious to the plants remains to be tested by their next year's crop.

If the Cuthbert has a fault, it may be that it suckers too profusely, but these are easily dealt with by the cultivator or a sharp, thin hoe, such as are turned out now-a-days by our implement makers. One of the greatest revolutions of the age is the beauty and

lightness of the tools now made possible, by the facility with which iron is converted into steel. The oldest of us will remember how in our youthful days we broke our backs using the old heavy, blunt instruments.

When I speak of a sharp hoe I mean what I say. Get one of those flat files a foot long and keep the hoe, spade, etc., in such edge that they will cut like a knife. Do the same with the Dutch or Scuffle hoe and it will be a pleasure to use them on weeds or suckers.

The Golden Queen is said to be the ditto of the Cuthbert, but my plants, obtained last year through friend Hillborn, have not, of course, yet fruited. I am told, however, by thoroughly reliable parties, that it is a grand success. I used to grow Brinckle's Orange; it is the highest flavored of all the raspberry family. Its peculiar richness and high aroma is unsurpassed by any fruit. Unfortunately the cane is tender. After several years of great care I lost the plants, and have never renewed them. But Brinckles is the queen of berries. I have now about thirteen different varieties on trial, Marlboro', Turner, Caroline, Brandywine, Meredith Queen, Hansell, Cuthbert, Shaffer's Colossal, Crimson Beauty and Philadelphia.

The garden raspberry as a fresh fruit for the table has no equal; the wild one marketed by farm girls do not in any way come in competition with them. Carefully picked into quart baskets, or measured and sold in their fresh beauty with the bloom on they usually bring from fifteen to twenty cents a quart. The Ottawa market has never been at all supplied with them. The berries are picked off the stem as they are gathered, so that they do not require to be handled and picked again, as it is ready for the table the moment it is obtained. It will thus be seen there is neither shrinkage or waste. The fact that the core is removed when the fruit is picked precludes it being shipped from any great distance, as in the case of the strawberry; because the fruit would squeeze and spoil in transit; therefore the local producers are sure of having the Ottawa market to themselves. The greatest drawback to the trade in the fruit is, that as it begins to ripen the wealthier part of the community are on the wing to the seaside, but it is quite surprising how the middle classes and mechanics are now using the luxuries of life, and as a rule they make the best customers.

I cannot speak from actual experience as to profit, but if the Michigan people are to be believed, there are "millions" in them. One man writes:—"The last season there was picked and sold from a little less than an acre 100 bushels of fruit, sold for thirteen cents per quart net; producing \$384. Further, there was dug from the patch 48,000 plants, sold at \$3 per thousand, or \$144, making a return of \$528 for the piece of ground employed."

The plants of the raspberry may be kept in good bearing condition on the same piece of soil for ten or twelve years, if it has been well prepared in the first instance, and an annual top dressing is given each autumn. The ground should be forked over in the spring, and again after the crop is picked. On no account should a spade be used, unless plants are required, as it cuts the roots and causes them to throw up a profusion of suckers.

The only serious enemy we have to contend with is the raspberry saw-fly. This is easily destroyed by syringing the plants whilst in bloom, with a weak solution of Paris green. This may be applied with a hand-wisk, quite as conveniently. A teaspoonful in a pail of water will be found sufficient.

Dr. HURLBURT.—I don't know if my friend included the Black Cap. I have grown them and found them often very profitable.

A MEMBER.—What variety?

Dr. HURLBURT.—It is a wild variety, and they are very beautiful; but you have to be up before the birds in the morning; the birds are excellent judges of fruit, and I find they prefer them to apples and pears. Mr. Bucke refers to the raspberry as being superior to the strawberry. That is possible under the circumstances connected with our getting them. Most of the strawberries I have seen in the market here have

been Wilson's ; they are very large, but until they are perfectly ripe I think very few persons would eat them were they not called strawberries. I believe there are varieties of strawberry, however, which most persons would consider preferable to raspberries. Mr. Bucke has doubtless had more experience than I in growing raspberries, but I do not find they do best on a damp soil, but on a dry soil. The method of protecting them in winter which he has suggested is necessary, I suppose, where they are exposed, but not under all circumstances ; because I have found that they have been well kept in the spring without any care,—only keeping them erect by having a frame work between them. I have had no experience in growing them in the last four or five years, and his opinion is consequently of more value than mine.

Mr. R. B. WHYTE (Ottawa).—I have had considerable experience in growing raspberries, and I entirely agree with all that Mr. Bucke has said. The raspberry is better in quality than the strawberry, and its season is twice as long ; and we get three times the quantity of fruit off the same area of ground, which is a great advantage. I differ slightly from Mr. Bucke in regard to the way of protecting. I do not find that laying sods on the canes is sufficient, I think it makes the canes grow suckers, but I find they are too stiff to be kept down by mere sod. My plan would be to take a scantling or pole ; it is in every way much neater and better way.

The SECRETARY.—Do you cut them back ?

Mr. WHYTE.—Never until they are about from five to six feet high. There is no use in trying to grow raspberries here unless you lay them down in the snow ; if you leave them up some will live, but you will get no crop the next year. I know it is the custom of many people here to leave them up, bue they never get a crop, and it is that way with every variety I have ever tried, and I have grown about twenty.

The SECRETARY.—Do you make \$500 per acre profit from them ?

Mr. WHYTE.—I think I get more. I believe it is quite possible if they are given the attention they should receive, and give them plenty of manure.

A MEMBER.—What varieties do you prefer ?

Mr. WHYTE.—I think the best, upon the whole, is the Cuthbert, and the next Brinckle's Orange. I think those two are the best red raspberries.

The SECRETARY,—Have you the Clarke ?

Mr. WHYTE.—I have, but it is nothing like as good a bearer, though a very good berry ; I got them from the South.

The SECRETARY.—How does it compare with the Cuthbert for bearing ?

Mr. WHYTE.—I think under similar circumstances the Cuthbert is the best. Among the yellow berries the Caroline is not worth growing, the berry is not much and the quality is poor ; I think the Golden Queen is the best of the yellow raspberries, not even excepting Brinckle's Orange, which is very soft, and inclined to turn grey when it gets ripe. The Golden Queen seems to me to be better in flavor, and has all the appearance to me of the Cuthbert. I don't think blackcaps proper pay to grow here. They bear a lot of berries at once, and then no more ; they are something like the strawberry —bear for a week or so and then no more ; but the red raspberry seems to go on bearing from week to week, so that with proper varieties you have fruit five or six weeks. I have tried quite a numbsr of blackcaps, but I don't think any of them paid ; you can hardly lay them down. I tried blackberries a few years ago, and gave them up for that reason, although I had a very fine crop.

The SECRETARY.—I think Mr. Whyte and Mr. Bucke have both touched upon a very important point—protection. We in southern Ontario do not need to lay down raspberries in that way, and consequently have adopted a mode of pruning not adapted to northern sections. There we are accustomed to cut them back in summer time to cause the formation of laterals ; I think we get more fruit from them, and it is a very great convenience in cultivation. We have no long, sprawling arms to contend with, and we do not require any support for the bushes in the summer season. It is evident, however, that in northern sections that system of pruning is suitable, and it is an important point to note that here it is better for the canes to be long, so they will be slender, and can easily be laid down and protected.

Mr. MITCHELL (Innerkip).—I think some gentleman recommended a wild variety of blackcap, and I would like to give a word of warning in the matter. We tried a wild blackcap, and it introduced a very serious disease among our blackcap raspberries ; the cane of the wild blackcap seemed to blister, and the leaves turned yellow, and after a little time the disease spread over the entire bush. We found that this disease was contagious, and was communicated to our cultivated varieties, the Gregg and Mammoth Clusters ; so much so, that a few years ago we had to discard our blackcaps altogether. We found our Gregg and Mammoth Cluster where grown by themselves were free from the disease, but wherever we planted the wild variety that disease, whatever it was, was communicated to them, and we had to get rid of our blackcaps altogether. I would caution those present to beware of this disease in the wild varieties. I hardly know what it is.

A MEMBER.—Rust?

Mr. MITCHELL.—Yes, it appears like rust ; but whatever it is it is very serious. The wild blackcap is very prolific, but those who think of introducing it should remember that it has a disease which even our more tender cultivated varieties are not subject to when kept by themselves. At all events that has been the case in our district.

Mr. WHYTE.—I don't like the term "sprawling." I don't have mine sprawling. I have mine tied up with two strings, one at the top and another at the bottom. It more than pays for the trouble.

The SECRETARY.—It would be expensive by the acre.

Mr. WHYTE.—About a cent and a half a year per plant.

Dr. HURLBURT.—I had the blackcap I referred to several years, and never saw anything such as Mr. Mitchell has described wrong with it. The plants were perfectly healthy, and continued so year after year.

Mr. GIBB.—Thirteen years ago I put in a great many canes, and I made careful notes of them at the time and reported. The result was my retention of the Clarke as my red. The Early Wilson and a number of others I had to give up, as I found they winter-killed, even under cloth. The winter came on a little too soon and found several matured when it set in. There is a little berry—what I consider a dewberry—which sold for rather high prices. It has a peculiar flavor, and is not nice to eat, although sold for making jam.

A MEMBER.—What do you find your best blackcap?

Mr. GIBB.—I like the old Doolittle.

Mr. BORTHWICK.—A comparison has been made between the values of strawberries and raspberries in this market. I may say that our home-grown raspberries have always sold for from 25 to 50 per cent. more than strawberries when placed in competition. There is this difficulty about raspberries, especially from the west, that they don't stand the carriage very well, but those from the west have always realized much lower prices than our home-grown fruit for that reason.

Mr. BRODIE.—Ninety miles below Quebec they can grow Cuthbert and Brinkle's Orange without protection. The Turner, I believe, was another that would grow there.

Dr. HARKNESS.—My experience is that the buds of the Cuthbert even if put down, unless well covered with the snow early in the season, are killed. You put down a cane, say six feet high, and at the bend, where it is exposed to our cold weather, no fruit will grow, but at the top, from four feet up, you will have fruit. Of course that does not make a satisfactory crop ; and I think unless you put the Cuthbert along the fences, or somewhere where there will be snow drifts, you will have to protect it with a mulch of some kind. I have grown a great many different kinds of raspberries, and I must say my experience with blackcaps has not been favorable. There are two or three reasons for that. One is that the canes are excessively brittle ; you can't lay them down, and they are very apt to winter-kill. Another reason is that about the first of June, sometimes the last of May, but generally the first week in June, we have a slight frost in this part of the country, probably it will average one year in three or a little more than that, and the least frost in the world will kill blackcaps at that time when they are first beginning.

to blow. I have found the Mammoth Cluster hardy, but I don't like its flavor. The Gregg will not stand our climate, and I have tried the Hillborn and it will not. There is a very fine red raspberry here that is possibly hardy and which is of very fine quality, at all events my wife and I think it is the best that grows—that is the Niagara. The Turner is the hardest in my experience and will stand our climate standing up, but it pays to put it down and protect it, as you will have fruit earlier by doing so. It is so hardy that it needs no other protection than laying down in the ordinary snow-fall. The older sorts are good; one of the best I have seen is the Franconia; it is a little acid, but large and bright in color and very attractive. Blackberries have not been a success with me. I am not speaking of blackcaps, but blackberries, they are very unpleasant to handle. It seems to me that they are reaching out for you every time you go past them, and it is almost impossible to handle them. I do not grow raspberries for profit, but for my own use, and I only grow comparatively a few; but I expect to get my work done cheaply, and do most of it with a horse and cultivator. I plant my raspberries six or eight feet apart and let them grow, and in the spring I cut them back when about four feet or four feet and a half high. You will find your lower buds will come out, and they will have late fruit; you will materially prolong your season by that means, especially with the Cuthbert, which you can almost make a fall-bearing berry. Just one word in defence of the strawberry, which has been rather abused here, I think, and that I cannot stand. I still place the strawberry at the head of our fruit production. I can understand a man who eats nothing but the Wilson and Crescent Seedling having a poor opinion of strawberries, but if you grow New Dominion, for table use I don't think you will say anything against the strawberry. I think for flavor and aroma there is nothing to equal the New Dominion, for table use. There is another berry which I see very little about in your reports, the Maggie. I got it from Mr. Arnold, and it is in some respects an extraordinary berry. It is nearly as large as the Sharpless, and almost identical in flavor, though a little better I think, the grain a little finer. It is extraordinary prolific with me, and in the year 1886 I picked berries off my Maggie on the 8th day of June, and on the 16th of July I picked berries off the same plant, and between those dates I don't think there was one day that you could not have gone to those vines and got strawberries. I think, as far as I have seen any record, it is something almost unparalleled; and the same experience to a certain extent will be found every year, and the late berries hold their size well. I find, too, that we must not, because a neighbor finds one berry do better than another, jump to the conclusion that it will do better with us; for I have found within a very short distance changes of soil which had a marked effect on productiveness, and the general success of different varieties of fruit. And, speaking of soil, I want to say just a word about the soil for apple trees. In the county of Dundas, if we want to grow apples, we must get on one of those old glacial moraines—one of those old ridges with a gravelly subsoil. If you put them on our flats they will not do, even if perfectly dry and underdrained. To get a good orchard we must go on one of those ridges which run north-east and south-west. Most of them are the lateral moraines of the glacier that covered this country ages ago, and they are possessed of peculiar characteristics. On the north-west side they are stoney—that is boulders carried over them; on the south-east they are nearly all sandy, and underlaid with a gravelly subsoil. On those ridges we can grow orchards, off them we cannot.

Mr. HURLBURT.—Silurian limestone there?

Dr. HARKNESS.—I really can't say, doctor, we have limestone there, but in some places it lies very deep, and some places it is not; but this gravel is more or less a limestone gravel.

Mr. BUCKE.—I did not touch upon the black raspberry, because we can get them from the west so much better grown, and we have not been as successful with them as with the red raspberry.

The meeting adjourned from one o'clock until two o'clock p. m.

THE QUESTION DRAWER.

On resuming at two p. m., the question drawer was opened, and the following questions discussed.

PREVENTION OF POTATO BUGS.

QUESTION.—Will Mr. Dempsey tell us whether potatoes can be grown successfully without the use of poison to destroy the bugs ; if so, how ?

Mr. DEMPSEY.—The first question is very easily answered. Yes. The other question "how," will take a little more time to answer. All that is necessary is to destroy the larvae before it is hatched. To do this plant, only such varieties as produce very early, and bring your land into such a state of cultivation and fertility as will produce very rapid growth, and be sure to grow potatoes with only one eye in the hill, and that springing from a large piece of potato ; so that you encourage rapid growth. Fertilize your potatoes as much as you can after they are up by sowing a little plaster or anything else you like ; use every means possible to produce rapid, early growth in your potatoes. The bug invariably deposits the eggs as near the top of the stalk as possible, and if you can make the stalk grow three inches a week it will so shove the eggs of the potato bug that they cannot hatch. It is very simple, but I have had no difficulty this year in getting 200 bushels to the acre without the use of poison; and we had the same results last year ; two years in succession, you see.

THE CRAB APPLE.

QUESTION.—The printed programme of these meetings does not include the subject of the crab apple ; as this meeting is studying out fruits for cold regions would it not be well to include this subject ?

The PRESIDENT.—It was thought that the crab apple might have been discussed, and we thought some one in this section would have said something about it. Of course further west we don't feel the same interest in the varieties which are interesting in this section.

Mr. SMITH.—If anyone wants to ask a question in regard to varieties let it be sent in in the form of a question, and it can be answered.

Mr. BRODIE.—Mr. Gibb has more experience than anyone I know on the crab apple question.

Mr. GIBB.—Perhaps it is best not to interfere with the regular programme.

The PRESIDENT.—It would no doubt be of interest to some of those present.

Mr. GIBB.—My choice would be early strawberry, Gibb of Wisconsin, and Wonder of Wisconsin. The early strawberry ripens with the Red Astrachan.

The PRESIDENT.—It somewhat resembles the Early Joe, doesn't it ?

Mr. GIBB.—No, there is no resemblance.

The PRESIDENT.—There is one resembling the Early Joe.

Mr. GIBB.—None have that flavor, but they do in the thickness of skin.

Mr. BUCKE.—Why do you exclude the Hyslop and Transcendent ?

Mr. GIBB.—Because if you have had them two or three times you get tired of them.

A DOMINION FRUIT GROWERS' CONVENTION.

QUESTION.—At the last annual meeting of the Montreal Horticultural Society and Fruit Growers' Association of Quebec, the President, Professor Penhallow, brought up the question as to whether we could not hold in Montreal next winter a Dominion Fruit Growers' Convention. Does this society think such a move desirable ?

The SECRETARY.—Such a convention would be very interesting and profitable. Questions of general interest to both provinces would be the only ones discussed at such

a convention, which would be held, not perhaps every year, but occasionally, say once in three or five years. I think in that way it would be a desirable thing either next year or some time within a year or two. There are matters of naming fruits and other subjects that would be generally interesting for such a convention to consider.

The PRESIDENT.—I certainly agree with what the secretary says. It is a matter I spoke of myself some two years ago—the holding of a meeting of the Fruit Growers' Associations of the various provinces at a central point. I remember speaking on this question to a prominent fruit grower of the Annapolis Valley, in Nova Scotia, and I believe a great deal of good could be done by the meeting together of the Fruit Growers' Associations from the different provinces. Questions would come up affecting us all, not only interesting, but out of which we might seize something in which we are behind at present. I believe this is a matter that ought to receive a good deal of attention and consideration, and if it is brought properly before the board of the Montreal Horticultural Society, they would probably take the initial step, and communicate with the other societies, and I think the thing could be managed very nicely in a year hence—a meeting of the combined societies.

The SECRETARY.—Would you have it a meeting of delegates or of the members of the societies?

The PRESIDENT.—It could be either way: it can be open to the members if they choose to come, and I think there are a great many who would.

Mr. GIBB.—We have a board meeting about Monday of next week, and if you think well of the proposition, and pass any resolution favorable to it, we will enter into correspondence and go to work at once. There is nothing like having good long notice.

The PRESIDENT.—Is there any member of the Ontario Fruit Growers' Association here prepared to move a resolution. I suppose, Mr. Gibb, this matter should properly come before the Board of Directors, and I think probably if the secretary will make a note of it now, the matter will be brought up and considered at our meeting before the present session closes.

THE DISHONEST FRUIT TREE AGENT.

Q.—Is not there some legal way of preventing agents for fruit trees taking advantage of the ignorance of country people—generally to sell them something that will not suit our climate. I have heard that there is some law in Minnesota to restrain dishonest agents in this respect?

The PRESIDENT.—There is the dog law—setting the dog on them. I have not heard of any other law bearing on the matter at all.

The SECRETARY.—I think I have noticed something in the Minnesota transactions to this effect: that all agents who were taking orders through the country were required by law to furnish a certificate from some respectable nurseryman showing that they were properly authorized to take orders for fruit trees. I think this is a very important point. I think nurserymen have to bear a deal of blame which does not really attach to them, from the fact that there are irresponsible men going through the country imposing on the people. I think such a law here would perhaps be very wise. At all events, I think people should be warned not to patronize any agent who has not a certificate showing that he is properly authorized.

The PRESIDENT.—Just a point in that connection, which is this. Personally, I feel a good deal of interest in agents; I used to buy from nearly every agent that came along, and I have many times felt like punishing some of them very severely. I have been taken in very often myself, but at the same time I have looked at it in this way, that were it not for these agents and the risks we take in the matter, we would not be as far advanced as we are to-day. We have been able from that simple fact to test varieties from different localities that we would not have known of but for the incessant bother of these agents, palming off fruits upon us. But just at this point we see the necessity of anyone who takes any interest in fruit growing joining the Ontario Fruit Growers'

Association. I think everyone who takes any interest in an association of this sort looks into their writings and reports of discussions and so on, and if he does that, it will not be an easy matter for any agent to fool him. They can see by our reports what they ought to buy—what there is some chance of success in their locality with, or whether there is no chance of success at all, articles that have been tested and those that have not been tested. I think they will find themselves very safely guarded by joining such an association as this.

Mr. WRIGHT.—Mr. Gibb says there is such a law in Minnesota.

Mr. GIBB.—I happen to know in this way, that Mr. Harris of Minnesota wrote me. The trouble there is that the farmers bought a great deal of stock from the south, so much that the impression has risen generally among the farming community there that the tree cannot be grown. To avoid that, they have passed a most stringent law. A man who lives outside the State of Minnesota, and grows his stock outside of it, if he wishes to sell his stuff to agents in that State, has to deposit with the Secretary of State the sum of two thousand dollars, and then the secretary gives him a certificate authorizing him to sell his stuff in the State of Minnesota. The question has been raised whether the two thousand dollars is to cover the operations of all his agents, or whether there ought not to be a deposit of two thousand dollars for each agent, and that question had not been settled when the last report came out. In addition to that, a duplicate of the order has to be given to the purchaser, so that if there is any misrepresentation in any respect it can be ascertained. Of course, the two thousand dollars is held as a bond, and the State Government will hold the man responsible for any misrepresentation. It is a hard law, but they found it necessary to make a law of that kind.

Mr. MITCHELL.—There is a sort of misrepresentation which, if there are any nurserymen or agents here, I would like to mention. That is in the matter of roses. I have been getting them from nurserymen and agents for years, and there are some varieties I have never been able to get. I suppose they have thought that I am only an amateur and have only a small stock of roses, and that if they sold me something better than I ordered it was all right. But there are certain varieties I have been ordering and could not get, and I would like to call the attention of nurserymen and agents to the fact that even though they may send me a better variety than that I ordered, it is quite possible that I may be already supplied with that variety; indeed, that has unfortunately been the case with me frequently. We do like when we send for anything, whether it is through an agent or to the firm direct, to get what we ordered; we don't even want something better than what we ordered. If there is anyone here who has in this way sent me something better than what I ordered; I hope he will make a note of it—that I want what I order, no matter if it is not quite as good as something else.

BURYING TOBACCO STEMS UNDER VINES.

Q.—Has any member tried the effect of burying tobacco stems under his vines as is done on the Rhine, to keep away vermin and mildew?

Mr. DEMPSEY.—I have never tried it myself, but I have seen some gentlemen trying it.

Mr. WHYTE.—The question is mine; a gentleman who traveled in Germany, tells me it is a very common practice there, and that it was believed to be an entire preventive of thrip. He advised me to bring it before the meeting.

The PRESIDENT.—I make use of sulphur in my viney twice during the season, and I use it on the soil only. I never know such a thing as mildew, thrip, or anything of the kind. Whether it is due to that or not I can't say; the absence of mildew certainly is. I use it early in the season as the vines are blooming, and afterwards when the fruit is about setting, and it seems to me to always have the desired effect.

GRAPES IN THE OTTAWA VALLEY.

Mr. R. B. WHYTE (Ottawa).—This is not the natural home of the grape vine, and owing to the severity of our climate we have to be constantly on our guard. We have a short summer, and the principal difficulty is the cold winter, which affects all varieties. Every year our thermometer goes down to 35 and 40 below zero, and that necessitates covering. This necessity for covering renders it quite impossible here to prune vines up as high as is commonly done in the west, or in the United States, and it is necessary to have it done so that they can be laid down, and also so that they can be laid down easily without breaking. There are quite a number of systems which answer the purpose. The system now is the two arm system—first two arms along the bottom of the trellis, and cut down all the fresh growth to one or two buds; I think that is by far the best, and by that means you have a vine which is easily laid down. Another is a modification of that system. Instead of growing short spurs to these arms they grow upright, and allow the fruit buds to come out about eighteen or twenty inches apart. I have tried that, and find that they are very apt to break off. Another system I have had a good deal of success with, and not much practised here, is the arbor. How it is going to work in the future I don't know, but for the present I keep it under control, and the most successful vines I have this year are trained that way. The chief advantage of the two arm system is the facility it affords for laying down; it has greater advantages for covering than any other way, and also much simplifies summer pruning. I have tried covering with corn stalks, straw and straw manure, but I find that nothing answers so well as earth, which never brings mildew on vines as the others do. It is no easy thing trying to grow grape vines here without cover. I have met several people who have tried with the hardy varieties, but it is a total failure; no fruit bud can stand 30 to 40 below zero unless it is covered. In some cases, I believe, they have lived through when covered with snow, but my experience is that it is not sufficient, and I have always found the earth satisfactory. This necessity for covering with earth has one good effect, it prevents too close planting; you are obliged to plant your vines far apart. I have found that about twelve feet each way is the best average distance, you can get quite enough earth between rows twelve feet apart to cover the vines. The remarks I made a few minutes ago in regard to the raspberry apply also to the grape; we must have all the sun possible; it is no use trying to grow a grape vine unless you can have it where there is no tree or house for shading the vine. I have had a good deal of experience in this particular. Last year I was seeing the way the Brighton behaved with me. I had one growing in one of my arbors, and it ripened early, quite as early as Moore's Early. I had another one growing where it was shaded by an apple tree, and it never properly ripened at all. The only difference was that this was shaded by the tree, and didn't get the proper amount of sun, while the other did. Another point on which there is a good deal of difference of opinion among grape growers is summer pruning of vines. I am quite satisfied that it is better not to let the grape vine exhaust its vitality in growing more fruit than you require. I have an arbor in the shade of my house, where we allowed it to grow all the fruit that it would—it is Roger's No. 3, and might not require a great deal of sun, but every year the grapes on this vine are quite unfit to eat; they never have a proper flavor. But, while it is absolutely necessary to produce the best fruit, it is quite possible to overdo summer pruning, by taking away so much of the foliage that every shoot bearing three branches of fruit has only eight or ten leaves. This is a great mistake, and never fails to yield poor fruit, the fruit no doubt colors earlier, but it never ripens properly, and never has the proper flavor. A striking illustration of the ill effect of defoliation may be observed in growing tomatoes. Everybody finds it difficult to get all the tomatoes ripe, and it is the practice to cut off a great part of the leaves to let the sun in, but the result of this is that you get fruit with no flavor. Now, I never pull them off if they are not ripe before the frost comes, and the same applies to the grape; but we must train our fruit so as to get the greatest possible amount of sun if we want to secure the best results. It is very difficult to lay down any rule as to summer pruning which another person can safely go by, so much depends on the variety of vine and the vigor of its growth. As a rule I grow my vines

on the two arm system on a trellis about five feet high, and I allow them to grow perfectly free until they get to about the top, about five feet high, when I pinch them in; I never allow them to grow beyond the top of the vine. Then, as the laterals begin to break, I always pinch them back to one shoot, which I think enables the fruit to ripen properly. One of the great drawbacks here is the uncertainty of our season. Up till 1881 we had no trouble in ripening any varieties, but since that until last year, which was like 1881, we had a succession of cold summers. To show the difference between years, I may say that Moore's Early ripened with me last year, well colored, on the 28th August, and perfectly ripe on the 4th September. The year before that it was fully two weeks later, the 10th and 18th of September, and in 1886, when it was still colder, it was another week later. A very important question is what kind of grapes to grow. I have made an abstract from my diary last year of the time grapes ripened. As I said before, Moore's Early ripened on the 28th of August and the 4th of September. It is somewhat singular that the Brighton was quite ripe on the same date; that the vines that had had all the sun I could give them ripened as early as Moore's Early. Adirondack, Rogers' 3, Amber Queen and Eumelan were quite ripe on September 8th and 12th. That is last year's experience, all ripened by September the 12th. In 1886 it was from the 25th of September to the 1st of October before they all ripened. The previous year the great bulk of the grapes were green on October the 6th; the only kinds that ripened at all being Moore's Early, Rogers' 3 and 9, Delaware, Martha and Brighton. It is a very difficult thing indeed to tell what kinds of grapes to grow here from any one year's experience; you must take the average of several years before you can have any idea. I have made here a list of the grape I have grown, those I consider the best, and those I have thrown out. Among the black grapes I put first Moore's Early, I don't say it is the best, but it is generally a most respectable grape. Brighton is a fair grape. A much better is Rogers' 4 or Wilder, which I have placed second; I consider it a much better grape, and a fair bearer, and it ripens just a little before the Concord. It has this great advantage over the Concord—that it is fit to eat before it is ripe, which the Concord is not. Along with the Wilder is the Barry and one or two other of Rogers' grapes, which are so much alike that I do not separate them. In my experience we really have no thoroughly reliable third black; all the others are so far behind that they are hardly entitled to be put in third place; the Adirondack, I think, is the best. The Burnet mildewed this year, though it is the first time I had any trouble with them; before that I had a good opinion of them. There are a great many grapes I have not tried, among which is the Champion, which is a grape I don't think it is right to grow; it is corrupting the taste of the people who use grapes, and it is really doing mere harm than good. It is undesirable trash. The Hartford Prolific, too, I think is not worth growing. Othello I threw out after four years' experience. I had some experience this year with the Eumelan; I had a good crop, but it had no flavor to render it worth keeping at all. Of red grapes it is hard to decide which to have, there are so many good ones. The Brighton first. No grape is more complete than the Brighton, which is perfect in every way. It ripens with me in the first three or four days of September, and there is no grape in my opinion which so nearly combines all the requisites for perfection as it does. I have had great success with Rogers' 9 and 15. 15 is a little late in ripening, but even if it does not ripen it is good and fit to use. There are a great many other grapes that have been successful; Rogers' 3 is a very good grape. Delaware, I may say, I don't think I will grow any more; I had five vines last year, and got nothing at all off them. It is a small grape which the birds find it very easy to pick off and swallow.

A MEMBER.—Put bags over it.

Mr. WHITE.—I don't think it worth it. Iona ripened early last summer, and if it would do so every summer would run even the Brighton a hard race. It never ripened with me, however, until last summer. Salem does very well here now, but Walter's ripens too late. The Amber Queen I fruited last year, several vines, and it is a very nice flavored grape, but you can't get a decent shaped bunch, and for that reason I don't think it is a grape likely to retain its place. Among green grapes the one I put first is not grown, I believe, in the west at all, the Chasselas de Fontainbleau; it may mildew in

an unusually severe season, but it is worth growing if only for three or four a year. The next is a small grape for which Mr. Dempsey is responsible, the Dempsey 60. It is much superior to the Delaware here, and one that is generally acceptable; I know when fruits were in I would bring grapes that they would think were the best of the lot. The next is the Martha, which with me has done very well indeed, no mildew. The Pocklington and Niagara will not ripen here. I do not grow Jessica myself, but I saw it last year, and I think it is quite useless to grow here. A grape I had considerable success with is the Autochon, it is a very handsome vine growing, and the bunch is very pretty. I think that is all on the subject. I may say that several of the grapes I have spoken of were the property of Mr. O'Connor.

Hon. R. W. Scott (Ottawa).—My experience does not quite agree with that of Mr. Whyte, and I was considerably taken aback at hearing some of my favorites receive the castigation they did at his hands. One in particular is the little Delaware, upon which I have been growing fruit for twenty-five years and which has never failed to ripen, and to ripen moreover with very large crops. If you give it the proper food and exposure, and proper treatment, I think it is a grape that will respond most vigorously. I have taken off a certain vine forty pounds of Delaware grapes at one time. During the time I have been growing it I have never, with the exception of one year, failed to realize a satisfactory crop. Besides, the Delaware grape in this part of the country is very much superior to that grown in the western section. A few years ago when the association met here in the grape season some of the members came along to see these grapes growing in my garden, and that observation was made by gentlemen from St. Catharines and other points in the west, that the fragrance was very much superior, that it was larger, and very much finer than the Delaware under similar conditions in the western country. I dare say many of the members have detected that where fruit will ripen and mature thoroughly in a colder climate it is superior to that of the warm climate. You take the apple of Montreal, grown on the north shore of the island, or of the Ottawa valley, and those of the west, and you will find the fruit entirely different, one is not worthy to be considered, while the other is quite fragrant, and the most delicate that can be grown. I have remarked that not in reference to the apple alone, but also the grape, and therefore feel somewhat displeased at Mr. Whyte's cut at the Delaware. He finds difficulty in laying down the grapes year after year. I have Delawares which have been laid down steadily twenty-five years, and I certainly don't experience the same embarrassment ; they are now old vines, and pretty stiff, yet they take up their position very readily. They are allowed to fall of their own accord, and lie until the weather is closing in for the winter. Then the plough comes along on each side, and a ridge of earth is thrown up and in that way they are buried. Sometimes one may require a heavier covering, and a man follows the plough with a shovel, and completes the covering. I think it must be, admitted that grapes treated in that way in northern latitudes yield much more abundantly than those further south which are not put down in the winter. I notice in reading United States horticultural papers that the question is frequently asked if the grape does not yield as liberally the year after if it has not been put down. The labour of putting down the vine is fully repaid the following season by the quantity of grapes produced. If I were selecting grapes for this part of the country, and were confined to one variety, I should certainly choose the Delaware ; of course it requires great care, and many years it carries too much fruit, for whith you suffer the next by its absence. The second grape I would take for profit in this part of the country, is the Lindley. Agawam of course is a very fine grape too ; I have been growing it a great many years, and it is a very fine keeper, which is the best of it. The Lindley is not as good a keeper as the Agawam ; I find they keep well up to Christmas or up to the beginning of February we have been using them. There is another grape which I regard as the best if it would ripen, but it does not. It is the Iona, which is equal to any grape in the world ; I do not know any hot-house grape finer or more delicate in flavor than the Iona ; even when unripe it is preferable to many other varieties of fruit. I have grown it many years, and though it does not always ripen it is, as I said, preferable in the unripe state. It is a very liberal bearer, and the vine is a very beautiful one, growing in festoons lovely in form, and it always has an enormous crop. The vines bear too much, at least I have

found that difficulty ; if the quantity of fruit is reduced the green buds stand a much better chance of ripening, and although it does not ripen perfectly every year I should be exceedingly sorry to cut down any of the vines I have. The other grapes I have are the Adirondack, which I have been growing about twenty years. It ripens fairly well with me, and is a fairly abundant bearer. I find Eumelan very salable, and it always ripens, and is a very good bearer. With the Brighton I have had only limited experience ; Mr. O'Connor has had much more experience than I have and he thinks very highly of it, and what I have seen of it myself has been of a most favorable character. The Diana will only ripen occasionally, though it is a very nice grape. The Rebecca is a very pretty and delicious white grape, and one that always ripens, but I would not advise any one to plant it. Moore's Early I find a fairly good grape, but not as abundant a bearer as many other varieties. It always ripens. To our western friends, however, I am afraid we cannot give any very valuable hint, because the knowledge, not alone of grape growing, but of horticulture generally, is so much more widely diffused in the west than in the east. It is only of late years that fruit growing has been begun here, and at one time it was the general belief that very few fruits could be grown here successfully. However, I have experimented not only with grapes but with several other things, and I find this part of the country rather favorable than otherwise. I think the reference which has been made to agents is exceedingly pertinent, and I think if some authority could see that no sales of fruit trees were made except to experienced persons it would be an immense boon. There has been great discouragement in this part of the country, where large numbers of trees, vines and shrubs of one kind or another, the refuse of various nurseries, have been disposed of, which were not in any way adapted to the requirements of this part of Canada. In consequence of this a very general opinion has been formed that the Ottawa region is not adapted for growing fruit. There are many very excellent varieties of apples, pears and other fruits which can be grown in the Ottawa Valley, but the difficulty is that people in ordering trees have gone in for too great a variety ; had they limited their orders to these particular varieties, there would have been no difficulty whatever in producing just as fine fruit, though not in as great variety, as in any other part of Canada, which I think the display on the table here will show.

Mr. A. M. SMITH.—How do you keep your grapes ?

Mr. SCOTT.—In cork dust—these grapes have been kept in cork dust. I have kept Ionas in very much better condition than any of those on the table until the month of March. This year, leaving them out in a cold shed, the frost came on too quickly and touched them all. As a rule I can keep the Delaware till Christmas ; we use the Delawares until Christmas, and then after that some other variety, keeping the Ionas until late in the spring. I have eaten Ionas which were perfection in the month of March. I may say that I don't think there have been six days this year since August that grapes have not been on our table twice a daily. They were packed in barrels and boxes, covered with this cork dust in which the Malaga grapes are brought to Canada. I have the cork perfectly dry, and on a dry, sunny day put the grapes directly into the barrel, covering them with a layer of the cork dust, and then put in another layer of grapes and cover them with the cork dust and so on.

Mr. MITCHELL (Innerkip).—I have never listened to any discussion on any subject from which I have learned more valuable facts than I have acquired from listening to the gentleman who has just finished speaking, and from Mr. Whyte, who preceded him. There is one point I would like to emphasize, which was taken by Mr. Whyte ; that is, that there is a proper balance between foliage and a healthy growth of a plant, not only with grapes, but in regard to everything else. I have experimented a great deal in that direction myself, and I find that the foliage of a plant is just as necessary to its healthy existence as the root ; if you take too much foliage off the roots decay. Mr. Whyte mentioned the Worden, but said that he had not much experience with it. Of course I am not from the Ottawa valley, but I come from a pretty cold climate, and I have been fruiting the Worden for several years, and I have been recommending it to all my friends, and as the climate where I live is something like yours, I can recommend it here, almost beyond any other grape that is grown. It

is earlier than the Concord, and very similar or rather better in flavour, and very much like it in hardness and many other respects, which are very necessary in a good grape.

Mr. O'CONNOR (Ottawa).—I have had some little experience in growing grapes. My system of cultivation is very much as described by Mr. Whyte. My trellises are about five feet high, and I grow the vines on the two arm system, which I find as convenient as any method with which I am acquainted, and that in the laying down of the vines it is the most convenient we can adopt. In regard to pruning, I prune very much in the manner which has been described, allowing the vine to run to the top of the trellis, and after that I prune up above that, and take away more or less of the lateral shoots, though I quite agree with the gentleman who has spoken in regard to the ill-effect of taking away too many of the leaves. Evidently the leaves are there for some good purpose, and it is a mistake to remove them so that the fruit is bared to the sun ; it does not ripen satisfactorily. In regard to sunlight and shade, grapes will not do at all where there is any shade. When I started growing them I planted two or three rows in the neighbourhood of a pine grove I have, but I had to give them up ; for while the grapes planted in the open field where the air was on them from morning till night did well, these did not. In regard to varieties, I may say that I have had in my collection twenty-five different varieties, but I think after all that in this climate there are just four or five which can be grown with success. It is only just for the sake of having a little selection that we go beyond that, but for every-day purposes I do not think it is desirable to have more than five or six. In regard to the Delaware, I have to agree with Mr. Scott that the Delaware is a very admirable, choice little grape, and not to be discredited ; it is a grape, however, which requires very careful culture—you have to take a good deal more care than with other vines, but it pays, because its flavour is very delicious. Of the Brighton I suppose I have about 200 vines. It is no doubt a very excellent grape, a very abundant and constant bearer. It has borne now for a number of years with me, and it bears a very large bunch of fruit, and the grapes have a very rich flavour. It is also a grape which ripens reasonably early. This year all my Brightons and Delawares ripened early—there are samples of them here picked on the 9th of September, and I don't think they have lost a great deal of their flavor. I think their flavor is just as good as the day they were picked, except the Brighton, which I do not think keeps its flavor as well for a length of time ; while the others turn more into sugar the Brighton turns more into water. After the Brighton the Lindley is a magnificent grape. There is no doubt that it generally ripens and gives a very fine bunch ; I am so pleased with it that I am going to put in about 100 more vines this spring. Rogers' 15 is a fine grape. With regard to Moore's Early, I think amongst black grapes it comes after the Champion. The Champion is the worst grape going, and I quite agree with Mr. Whyte that it ought to be cut out of all vineyards ; because it goes on the market very early in the spring, and everybody who tastes it is so disgusted that they don't want any more grapes. It gives people false impressions, for many of them think that all black and red grapes grow on the same vine, and are all of the same kind. In price the Champion is really worth nothing at all, and yet it generally brings the very best price of any grape that is sold. A gentleman has mentioned the Worden. I have fifteen or sixteen Wordens bearing, and I can bear testimony to all he says, that the Worden is one of the finest black grapes that we have. It is a good deal better than the Concord ; it is larger, has a magnificent bloom, is a fine bearer, and in every way a beautiful grape. It yields a magnificent crop, and is hardly any trouble in management ; it is hardy, and, if the season is anyway reasonable at all, it ripens.

A MEMBER.—How do they keep ?

Mr. O'CONNOR.—Well, they were a very large crop this year, and they were selling for nothing, and I thought I would put up a lot as an experiment. Black grapes will not keep at all. I have put up a variety of the black grapes, and they have all failed to keep, there is no use in trying them at all ; they failed in a very short time—not more than a month. I put fifteen hundred pounds of grapes in my cellar last September, which have kept very fairly. First, I put in a lot of black grapes which all failed, all mildewed and had to be thrown out. But in regard to red grapes, the Brighton keeps well ; so does the Rogers' 15 and Delaware, and the Lindley keeps splendidly. The

three best keepers, I think, are the Lindley, Rogers' 15 and the Brighton. There is no secret in keeping grapes. All I did last year was, we picked, and got a lot of little paper boxes such as you get in stores, where they are very happy to get rid of them, and placed the grapes in them and put them into a cool cellar. The boxes you see on the table are the identical ones in which they were placed, and they have remained undisturbed in those boxes since the 9th of September until I took them out this morning. I put in 1,300 lbs. of the red grapes, and they have kept remarkably well. During the last five months we have had them every day, three times a day for a large family, besides a lot I have given away. Mr. Scott has gone to the trouble of packing in cork dust, which is very troublesome. I went to that trouble once and it did not succeed, and I then thought I would adopt my present method. The whole secret is to keep your grapes in a cold place, as cold as you like, as long as it does not freeze. I find that grapes I have had up from the cellar and in the room for twenty-four hours seem to wilt and shrivel up. But keep them in a cool place and they will be in the same condition you see them here. For red grapes I say the Delaware, Brighton and Lindley and the Rogers' 15, and of the black grapes I know none that gives more satisfaction for a general grape than the Worden.

A MEMBER.—Do you think it beats the Concord?

Mr. O'CONNOR.—Well, I do. The Worden is more reliable, and in my opinion a better bearer. It is a little larger grape, and has a most magnificent bloom, and a very nice flavor.

Mr. BRODIE.—How does the Worden compare with Moore's Early?

Mr. O'CONNOR.—I don't think it compares with Moore's Early which comes in very soon after the Champion. Moore's Early ripened in August this year, I did not keep track of the precise day, but very early indeed. I don't think the Worden would ripen at that period, but I think it ripens sufficiently early to be a very satisfactory grape if there is any reasonable weather at all. What we are most afraid of is the first week in September there will come a frost, and the temperature drop down in one night. If you can only get over that it is all right.

Mr. MOSGROVE (Ottawa).—When I came here to-day I certainly did not expect to address this meeting, because I am a novice in fruit growing compared with so many here. I took up grape growing, like my friend, Mr. O'Connor, first for pleasure, and at the present time I have some eight acres covered with vines. I knew nothing about it; I had to trust altogether to the experience of others—to purchase intelligence. I must say that I did not find it by any means as advantageous as I could desire. The first difficulty I had was that every man I got to plant my vines planted them on the principle that they required all the sun and air possible, and for that reason planted them near the surface. Two or three years showed me that that was a mistake, and we had to plant them from ten to thirteen inches in depth. I may say I have lost a thousand vines a year, and all attributable to the fact that they were not planted sufficiently deep. The next trouble was the training. I adopted the course which I have seen described as the two arm system. The difficulty with that is laying down, and in that respect you have to improve upon the system. I find that instead of having the stem coming up, and then your two vines branching out each way from there, you have to start them, as it were, from the ground. You have to start the vine from the ground, not above the ground, so that when you lay them down they can lie flat on the ground without injuring the vine. Upon this point I have made what I may call a discovery; I have found the practical utility of doing this. In laying down the vine my man makes with a hoe a pit three or four inches deep, and puts the vine in the bottom of that pit, and then after that they lay them down and peg them there. I find that when this course is adopted it has two results. In the first place you get them so much lower, so much more covering upon them with a less quantity of earth; and secondly, when they are pegged there they remain firmly fixed, instead of springing up, as they do when laid upon the surface. That being done we put the plough in, and plough about four inches in depth right up on the vine, in such a manner that the man following with a wide hoe can cover them up very quickly. I find that one of the great objects in connection with keeping the vine here is to keep the snow on the ground. I have this year adopted a course which I do

not know how it will work. The first thing we used to do was to cut away the vines from the trellis. This year instead of doing that I have simply cut away the arms from the wood, leaving the growing wood as it were upon the trellis. This I expect will tend very materially to keep the snow upon the ground, and thereby form a protection for the vine. If this succeeds this year I shall carry it out more fully next year than I have done this. I have a good many of the grapes that are shown here, and they have all done very well, but I have lately taken to another plan of cultivating grapes altogether—I have adopted the Riparian family for this northern climate. I think if we want to succeed here with grapes we must take our wild grape, and propagate from that, or get a seedling; I think that will be profitable. Upon my location I know nothing about frosts, I have never yet had a single grape killed with frost. They have all ripened with me. It may be that my location is favorable in that as in other respects. Mr. Hillborn was on my grounds last year, and I showed him some of my Elviras growing there. They are always ripe a few days before the Concord. The grape colors and ripens earlier a good deal; it is a very fine wine grape. The Elvira, of course, is a white wine grape. Now, about manuring. Up to this last year I have used barnyard manure. Last fall I got a quantity of ashes, and I have used some of this phosphate from the mines down here, unprepared in the mercantile sense, but ground very fine, and this year I have got in the neighbourhood of a thousand bushels of ashes, and I think two tons and a half of that I mixed last fall. I intend to put some thirty to forty bushels per acre of this on my vines next spring, and the balance I will apply to some other land I intend to plant on. My view, as I said before, is that here we must adopt the northern or Riparian grape if we want to succeed.

Mr. GREENFIELD—(Ottawa).—I have had a little experience, and we find the more experience we have the better grapes we get. At one time we were glad to get the Champion, but now we get far superior grapes. The best grape we can get, I think, is Moore's Early; it is very good to keep, and comes in early, and it has very much the flavor of the Concord; you can hardly tell one from the other except by a little difference of the skin. The Prolific is an excellent bearer, and comes in late, and it will stand frost. Then the Delaware is an excellent grape and a very good bearer, and so is the Brighton. The Agawam is very good, and we are getting some more, but we find Rogers' 4 rather light for this climate, though it is an excellent grape. Rogers' 3 is very excellent if it ripens. You have to keep the Brighton down, but if you can get it right it is a good grape. I have had Chasselas de Fontainebleau, a very large variety of grape; it is a very good keeper. I have a number of seedlings too, which I expect to be able to bring out next year, and I am trying to rear new grapes in the climate, for I think if you raise fruit in the climate where it is to be grown, it is better than that which is brought from other parts. I have one that ripens as early nearly as Moore's Early, it is a very good bearer and has an excellent flavor, and if I have anything like good weather, I hope to be able to send some up next year. The Niagara is not bearing, but I have the Lady, which is an excellent bearer, though a little tender; it requires care. Iona, if you can get it ripe, is one of the best you can have, but you can't depend upon it every year.

Mr. BUCKE.—I would like to hear from Professor Macoun in regard to the Riparia and Labrusca.

Professor MACOUN.—I think those varieties raised from the Riparia are far more likely to succeed in ripening early in Canada. The Labrusca does not grow naturally at all, but the Riparia grows down on the Isle of Orleans and in the North-West, and I believe these northern varieties will yet show us that we are only beginning to raise grapes here. I may say that twenty-seven years ago I sounded a trumpet note in Colborne, on Lake Ontario, when I told people in that village that the day was coming when all the territories along Lake Ontario and eastward would be covered with grape vines, and I have lived to see the day, and I can go further now, as I said to my friend Mr. Gibb a few minutes ago, and say that I believe in ten years time grape vines will be grown in many parts of the North-West, above Medicine Hat, on the open prairies, and will ripen earlier than here. There is no doubt that you could find that the temperature at night goes much lower in this vicinity than it does in western Canada. We have no

vine in Canada akin to the Labrusca except just one along the Niagara frontier, which comes near it.

Mr. WHYTE.—I quite admit that the Delaware is a nice, sweet grape, and I would grow it if it would ripen. In regard to what Mr. Scott has said about the crop, it is quite new for me to hear of forty pounds having been taken off the Delaware here. Mr. Smith, a large and successful grower, told me he thought he had a large crop when he got eight pounds. I am not satisfied with eight pounds. I quite agree with what Mr. Scott says as to the grapes here having a better flavor than those of the same variety when grown west. Last year I used to buy all my grapes, and bought from the west, and I am satisfied that our Lindley and Delaware are better grapes than those grown in a warmer climate. In regard to what Mr. Mosgrove says about deep planting, I am satisfied that four or five inches is deep enough—in an ordinary farm four or five inches is amply deep. When I spoke of the two arm system, I took it for granted they would branch at the ground, as I always endeavor to get them to do.

Mr. SCOTT.—The grape vine I spoke of stood by itself; it was a shade for a summer house and had the summer house to run over, so it had ample opportunity for getting both light and air.

THE BEST AND HARDEST SHRUBS FOR THE LAWN IN THE NORTHERN LATITUDES.

James Fletcher, F.R.S.C., F.L.S., read the following paper:

In introducing the subject which has been allotted to me to-day, I shall take the opportunity of drawing your attention to some of the most valuable, from a horticultural standpoint, of our indigenous shrubs. In this way, I believe, I shall serve a more useful end than if I were to speak of many of the ornamental introduced shrubs which are in general cultivation, and which are probably just as well known to most of you as they are to myself. Of course, there are many new shrubs being constantly introduced by nurserymen from different parts of the world; but the number which may be advantageously grown in the northern parts of Canada is as yet small. Probably the northern parts of Russia will prove the most fruitful districts from which useful shrubs will be introduced into Canada. Many have already been brought over, and no doubt before long others will be added to the number.

In the meantime, however, and without going to the expense necessary in obtaining plants from so great a distance, I believe we have in our native floral stores of wealth for the horticulturist as yet hardly touched and very little appreciated. This, too, of a nature exactly suited to our severe winters, and many of them equally beautiful with the most ornamental shrubs yet introduced.

On the present occasion, when speaking of shrubs, I shall use the word in the way it is generally understood by gardeners, viz., as a small tree, and not in its restricted botanical sense. With the gardener, a shrub is a small woody stemmed plant, whether it have one or many stems springing from the ground, and in this list are included the young plants of many of our forest trees—until they attain too large a size. Indeed it is amongst our evergreen forest trees, when they are young, that we find some of our best ornamental shrubs for the lawn.

Perhaps the most convenient way to consider our subject will be to take a glance over the natural orders as they are botanically arranged.

In the Crowfoot family (*Ranunculaceæ*) we find very few ligneous plants; but mention must be made of the three Virgin's-bowers (*Clematis verticillaris*) with its large mauve flowers, is a lovely object in rocky woods, where it climbs over low bushes and hangs out its delicate bells in the month of May. *C. ligusticifolia*, the Lovage-leaved and *C. Virginiana*, the Virginian Virgin's-bowers are useful for their profusion of white flowers, followed by garlands of beautiful silky seeds.

The Canadian Moonseed (*Menispermum Canadense*), is a woody creeper of great beauty and well worthy of much more extensive cultivation as a trellis plant. Its large

shining heart-shaped or ivy-shaped leaves, as well as its clusters of cream-colonred flowers render it an attractive object.

Of the Barberries, the Oregon Grapes (*Mahonia aquifolia* and *M. Nervosa*) are the most useful, as well from their striking foliage, flowers and fruit, as for the ease with which they are cultivated.

Of the St. John's Worts (*Hypericum Kalmianum*) is the only one which comes within our subject, and this is more suited for the border or shrubbery.

In the Rue family we find the Prickly Ash (*Xanthoxylum Americanum*), but the growth is too straggly for a lawn plant.

In the next order, however, the *Anacardiaceæ* we have the beautiful sumachs, many of which form shrubs of great beauty. The scented sumach (*Rhus aromatica*) is a charming shrub and easily cultivated. The variety *triloba* from the North-West has rather smaller leaves, but is equally beautiful. This species is being largely cultivated in the United States as an ornament on railway embankments.

The western variety *occidentalis* of *Rhus glabra* being of a more compact habit than the species, could probably also be advantageously used for the same purpose.

In the Vine family we have the deliciously scented wild grapes and the nseful Virginian creeper. The luxuriant growth and copious foliage of which make them the best of all creepers for summer houses or arbors, agreeable accessories to the lawn.

In the Buckthorn family we have few in Canada which would be valuable acquisitions to the lawn. *Rhamnus alnifolius* of Eastern Canada is a lover of swamps and the western *Rhamnus purshiana* too soon assumes its arborescent form. Even the New Jersey-teas (*Canothus*) frequently recommended, do not appear to me to be well suited for lawn culture. The growth is too straggling, and there is always too much dead wood which requires cutting away. When we have so many berry-bearing shrubs, I think their place can always be better filled. The best is undoubtedly *C. Oreganus* of the west.

Amongst the *Celastraceæ*, besides the species of *Euonymus*, which are scarcely hardy enough for northern latitudes, we have two worthy of special mention, the climbing Wax-work (*C. scandens*), with its beautiful scarlet berries, and *Pachyotima myrsinoides*, a small box-like shrub found in the mountains of British Columbia, with slender twigs and a profusion of small shining leaves. This would, I believe, form a good hardy substitute for the European Box (*Buxus sempervirens*) so extensively used as a border-plant.

Of the Maples a few may be grown as lawn shrubs.

The striped maple (*Acer Pennsylvanicum*) with its large light green foliage, and smooth striped bark as well as its pendant racemes of flowers is a great favorite. Other species which may be mentioned, but which are perhaps better suited for the shrubbery are the spiked or mountain maple (*A. spicatum*) and the two British Columbian species, the smooth maple (*A. glabrum*) and the vine maple (*A. circinatum*); in the same family we find the Bladder-nut (*Staphylea trifolia*) with beautiful flowers and handsome foliage; but it seldom forms an ornamental shrub. Of the extensive Pulse family (*Leguminosæ*) we have remarkably few indigenous species which can be grown as useful ornaments to the lawn. The only three which are truly indigenous belong to the genus *amorpha*. These are only known by the English name of Lead-bush, on the prairies where they are indigenous. Their fine foliage, compact habit of growth and conspicuous inflorescence render them objects of considerable interest, *A. canescens* and *A. fruticosa* I have found in Manitoba and *A. macrophylla* has been collected there with the others by Prof. Macoun. If however there is a dearth of shubbery plants amongst the *leguminosæ* this deficiency is more than made up in the next order the Rosaceæ. Here we have the cherries (*Prunus*) the best of which for the lawn is the common choke-cherry (*P. Virginiana*) of close growth and bearing a profusion of white racemes followed by heavy clusters of red-berries. The western black-cherry (*P. demissa*) which much resembles the eastern *P. serotina* but is more like *P. Virginiana* in its habit of growth, is also desirable. The other species are not quite so well suited for our purpose. The bird cherry (*P. Pennsylvanica*) when young and for a few years is a most graceful and beautiful ornament to the garden. Almost five years from the seed it forms a very symmetrical small tree with slender stem of bright color and with a large bushy head, covered in spring with bunches of white flowers and elegant foliage. Later in the year the heavy crop of crimson

cherries renders it still a conspicuous object. This thing of beauty however is not a joy for ever, it has the disadvantage of growing too rapidly and by the end of another five years has become too large for ordinary lawns. This of course may be remedied to a certain extent by pruning.

Closely allied to the cherries is the British Columbian shrub *Nuttallia cerasiformis* with light green aromatic foliage and bearing berries of great beauty. The pendant racemes of greenish white flowers are followed by bunches of large cherry-like berries which when half ripe are of a very pretty waxy-white with pink cheeks, when fully ripe however they are deep purplish-black. I have not tried this yet at Ottawa, but under the impression it would succeed.

Following the cherries, we have the meadow-sweets (*Spiræas*) all of which are useful. By far the most beautiful of our native species is the British Columbian *S. discolor* var. *ariæfolia* called in Vancouver Island "iron wood" from its hard and heavy wood.

This is a magnificent shrub and varies greatly in size. In the woods on Vancouver Island bushes fifteen feet in height may be found, while on the bare rocks small plants occur not a foot in height but covered with the large feathery masses of blossom which last from May to July. The two Hard-hacks *S. tomentosa* and *S. Douglasii* are already much cultivated in Europe as ornamental shrubs. Another pretty shrub, whether in flower or fruit, is the Nine-bark *Neillia opulifolica* which has been separated from the true spiræas. It closely resembles its Russian representative known as *Spiraea amurensis*. Of the Raspberries (*Rubi*) almost the only one worth growing as an ornamental shrub is the British Columbian (*R. spectabilis*). I believe this plant might be made use of in hybridising. The fruit is large and luscious; but has a peculiar astringency, a little of which might make some of our cultivated varieties even more agreeable to some palates. The red and white flowered scented raspberries (*Rubus odoratus* and *R. Nutkanus*) which have large showy flowers like single roses and broad leaves, may be used to advantage in shrubberies.

Our native roses are none of them suitable for separate cultivation on lawns.

A northern representative of this natural order and one well worthy of our attention is the Shrubby Cinquefoil (*Potentilla fruticosa*). It is a plant of wide range, the specimen exhibited having been collected in Alaska. Its compact habit of growth and large conspicuous golden flowers make it very desirable.

In large gardens a few small trees of our native hawthorns may be grown with pleasing effect. In the west we have black-fruited species and in the east those with scarlet haws, there is also a yellow fruited variety in western Ontario.

In the genus *Pirus* we have our native crabs and the mountain ash, also the chokeberry, (*P. arbutifolia*) which grows naturally in swamps; but like many other of our bog plants will grow almost as well, and certainly flower better on dry ground in northern districts. Of the June berries, the dwarf variety *oblongijolia* of *Amelanchier Canadensis* would probably be the most useful on the lawn; but the most important member of this family is the celebrated Saskatoon berry of the west. The showy flowers are followed by a profusion of intensely sweet berries which are collected in large quantities by the Indians and were one of the important factors in making their berry pemmican. This shrub I am sure might advantageously be cultivated as a fruit for the market.

Amongst the native gooseberries and their allies we find some of our most attractive ornamental flowering shrubs. I will draw special attention to the old-fashioned flowering currant, a native of British Columbia (*R. sanguineum*), the white-flowered black currant (*R. Hudsonianum*) and the golden-flowered black currant (*R. aureum*) sometimes called the Missouri currant. Moreover all of these bear fruit of economic importance and a seedling from the last, is the lately introduced Crandell black currant now receiving so much attention. Allied to the above we have from British Columbia the beautiful shrub known in gardens as "Syringa," (*Philadelphus Lewisii*.) This well known and much admired shrub of our gardens is a most conspicuous ornament of the deep canons and rocky defiles as the traveller follows the raging Fraser River up into the interior of British Columbia. Mr. A. J. Hill writing from a point a few miles above Yale, B. C., in June, 1880, thus refers to this

plant, "the whole country recently red with roses is now white with fragrant "Syringa," so lavish is nature of her floral gifts here." On Vancouver Island occasionally bushes are found, but nowhere in the same abundance as along the Fraser River. The flowers are produced in the greatest profusion, by far outnumbering the leaves, actually bending the slender branchlets with their weight and scenting the air with their delicious perfume. *P. Gordonianus* is also found in the mountains of British Columbia. The name "Syringa" as applied to this shrub is an error, as that is properly the botanical name of the lilac.

The next shrub calling for attention is the Wych Hazel (*Hamamelis Virginica*) a plant of much interest not only for its beauty but also from its quaint flowers which open in October and November and when growing separately it forms a pretty bush.

Amongst the Dogwoods (*Cornaceæ*) we have many species worthy of cultivation, as the flowering dogwood (*C. floridæ*), with its magnificent western representative *C. nuttalii*, both of which, however, run rather too much to trees for our present subject. Without actually seeing it in a state of nature few can comprehend the magnificence of this latter tree. One large involucrate flower cluster is borne at the tip of each little branchlet. The showy white petaloid involucres are sometimes over six inches in diameter, and when fully matured are of a snowy whiteness. The tree grows in woods and on mountain sides in many localities on Vancouver Island, as well as on the mainland. It forms a tree from 40 to 60 feet in height, remarkable for its slender trunk and branches. Hardly less beautiful is it in the autumn when clusters of bright scarlet berries have taken the place of the flowers. At the base of Mount Finlayson, near Victoria, V. I., are groves of the Giant cedar and Douglas fir, which raise their lofty heads more than 300 feet from the ground. The trunks run up clear of branches like vast columns for more than 100 feet, and in the dim light beneath these giants the dogwood reaches its greatest perfection, spreading out its many slender branches in all directions, bearing their wealth of white flowers which gleam like silver. The bark of the dogwood furnishes a valuable remedy for ague, which has frequently been used by travellers as a substitute for quinine.

Of the Cornels which retain the bushy form there are several worthy of cultivation; perhaps the best are the round-leaved (*C. circinata*), the alternate-leaved (*C. alternifolia*), and the red osier (*C. stolonifera*) dogwoods.

Amongst the *Caprifoliaceæ* again we have many showy woody-stemmed plants. Here we find the Snowberries (*Symporicarpus*), the lovely little creeping Twin-flower (*Linnaea borealis*), and the honeysuckles (*Lonicera*). The most ornamental of the bushy forms is the Bracted Honeysuckle (*L. involucrata*), found from the Atlantic to the Pacific, with deep green leaves and purple berries. The Bush Honeysuckle (*Diervilla trifida*) may be used on the outside of shrubberies. Of the Arrow-woods (*Viburnum*) many are useful. (*Viburnum opulus*) the High-bush cranberry, as well as its cultivated variety, the Guelder rose, or Snow-ball tree, are well known. Other species of beauty are (*V. lentago*) the Sheep-berry, and the Hobble-bush (*V. lantanoides*).

The Button-bush (*Cephaelanthus occidentalis*) of the Madder family may be used sparingly, the glossy leaves being its chief beauty. The round heads of creamy white flowers, although very pretty, soon lose their freshness.

We have now to pass over several orders without any shrubbery plants, till we come to the Heath family. This, however, is one of great interest, containing many valuable plants for the horticulturist. I will mention some of those best suited for growing on lawns. Amongst the Blue-berries (*Vaccinium*) few are worthy of our attention, although (*V. corymbosum*) has been highly recommended. The western *V. ovatum* makes a pretty low shrub. For growing in a shrubbery beneath other plants few are more desirable than the deliciously scented Eastern May-Flower (*Epigaea repens*) and the "Sal-lal" of the Pacific (*Gaultheria shallon*). Pretty compact shrubs which may be grown on a lawn where not too dry are the Leather-leaf (*Cassandra calyculata*), one of the first flowers to open in spring, and the Kalmias or Sheep Laurels. The most attractive plants, however, of this large family are the *rhododendrons*.

Rhododendron Californicum, Hook, the Rose Bay, is found on some of the rocky islands off the coast of Vancouver Island, and also on the mountain sides at Hope, on the

Fraser River, in British Columbia. The large rose-purple corollas, blotched and spotted inside with green, are produced in rich clusters at the tips of the branches before the new leaves of the year appear. The shrub attains to a height of six or eight feet, and has long been grown in Europe as an ornament for parks and gardens. This species and *R. catawbiense*, also found on the Pacific coast, have been largely used in cultivation for hybridizing with Indian and other species. Another kind of these handsome shrubs, *R. macrophyllum*, Dow, almost as showy as *R. californicum*, also occurs in the cascades or coast range of British Columbia. *R. maximum* was formerly found in Nova Scotia and western Ontario, but it is to be feared is now extinct in both of those localities.

The Canadian Rose Bay (*R. rhodora*) is found in enormous abundance in the Lower Provinces and is a beautiful object. This belongs to the deciduous division of the genus. Closely allied with the Rose Bay are the two species of Labrador Tea (*Ledum*). *L. palustre* is only found in the far north, but *L. latifolium*, much the more beautiful of the two, grows in all our swamps from Newfoundland to British Columbia.

Of the *Aquifoliaceæ*, or Holly family, we have two representatives worthy of mention. The Mountain Holly (*Nemopanthes Canadensis*) is a deciduous shrub growing in swamps, but bears transplanting very well. The foliage is light, and the berries, when freely produced, have a fine effect. I wish, however, to draw special attention to the Canadian holly (*Ilex verticillata*) as a desirable lawn shrub. Unlike the European plant so well known as "holly," our native species loses its leaves in autumn; but the branches bear a rich provision of beautiful scarlet berries, which may be preserved with ease, and answer the same purpose for Christmas decorations. This shrub is little cultivated, but is deserving of much more general attention. Of the *Lauraceæ* we have none which would give promise of success in this locality, the Sassafras (*S. officinale*) and the Spice Bush (*Lindera benzoin*), not proving hardy enough to stand our winters. Of the *Thymelaeaceæ*, the order which embraces the scented Daphnes of other climes, we have only one native species, the Moose Wood (*Dirca palustris*). In nature this forms a low, straggling bush, found in damp woods; but when planted separately in the open it makes a very pretty bush. The leaves are large, and the delicate color of the foliage renders it useful for mixing with other shrubs. *Daphne mezereum* has become naturalized in some localities, and is gradually spreading, possibly through the agency of berry-eating birds.

Following this order, we come to the *Elaeagnaceæ*, low shrubs, remarkable for a beautiful development of stellate and pellate hairs on the leaves. *Elaeagnus argentea*, the Silver-bush or Buffalo-berry of the North-West plains, grows easily and bears thick clusters of highly perfumed yellow flowers, followed by large silvery berries. *Shepherdia argentea*, although not bearing such fine foliage as the last named, is a more beautiful bush by reason of its scarlet berries, like red currants. Many a traveller in the North-West, before the time of railways, has blessed this bush for its acid fruit, a pleasant change of diet after living for months on pemmican. *Shepherdia Canadensis* is also a pleasing shrub which extends to the Pacific coast, where the Indians call it "soap-oolalic," and make a beverage from the berries by beating them up in water.

There are a few others of the deciduous shrubs which call for our notice. Of the *cupulifereæ*, one or two of the oaks may be grown as shrubs for a few years. Our hazels are scarcely ornamental enough to take the place of the easily procured cultivated varieties.

The Iron wood (*Ostrya Virginica*) and the "Blue Beech," or American Hornbeam (*Carpinus Americana*) are useful from their slow growth and symmetrical form. The Sweet-fern (*Myrica asplenifolia*) is a graceful lone shrub with leaves at first sight more like those of a fern than a woody plant. This is being also used with *Rhus aromatica* as an ornament on railway embankments in the United States.

Of the birches, all of the dwarf forms are useful, and small plants of the arbore-scent forms make a pleasing variety. I do not consider that any of our native willows are worthy of a place on the lawn, unless a collection is desired.

This brings to a close our list of deciduous woody plants.

We must, however, make a brief allusion to some of the *coniferæ*, which play so important a part as "shrubs" in landscape gardening.

Of the true pines (*Pinus*), few exceed in beauty our common Red (*P. resinosa*) and

White (*P. Strobus*) Pines. Of robust growth and graceful habit is *Pinus contorta* of the Pacific slope.

For general appearance and also for its hardihood in enduring all circumstances, few can compare with the wide spread White Cedar (*Thuja occidentalis*) which will thrive in almost any soil.

Another great favorite is the Red Cedar (*Juniperus Virginiana*), which is a tree of great beauty. The staminate or pistillate flowers are on different trees, consequently specimens of both should be grown, so that the berry-like cones, which add greatly to the appearance of this tree, may be formed. Of the *Piceas* the Menzies Spruce (*P. Sitchensis*) is one of the best. The needles are stiff and the growth is virgorous. An attractive feature of this tree is the bright yellow-colored bark of the young shoots.

In the two Hemlocks (*Tsuga Canadensis* and *Mertensiana*) we have probably our most elegant Canadian trees. When growing separately, no words can exaggerate the beauty of young plants of these trees at the time these young shoots are bursting in spring. I know of no simile which better expresses their appearance than fountains of living green beauty. They equal in grace the celebrated *Deodaras* of the Himalayas. The different species of *Abies* are short-lived and rather stiff in appearance; but beautiful trees of (*A. balsamea* and *A. grandis*) the Balsam Firs are frequently seen.

The light feathery appearance of the Larches (*Larix*) will always win for them a place amongst a collection of conifers. When grown separately and on dry ground, they seem to form more beautiful trees than when growing in their native swamps.

In conclusion, I beg to thank my friend Prof. Macoun, for his kindness in lending me the beautiful collection of specimens I have exhibited to-day, and without which, I fear, this paper would have been of little interest.

Mr. CASTON—of Craighurst.—Can Mr. Fletcher tell me anything about a little shrub which I have seen between Port Arthur and Lake Superior. I got off the train there one day and saw the berries. They were of a purple color, and when I tasted of them I found they were splendid. They were about the size of a grape, and the foliage of the shrub was very much like that of the snow-drop. I thought it would make a very useful as well as an ornamental shrub. I asked one person what he thought it was, and he thought it was a June berry. I don't know, because the June berry fruit is not ripe until July.

Mr. FLETCHER.—Was it a blue berry?

Mr. CASTON.—Bluish purple.

Mr. FLETCHER.—Did it have seeds?

Mr. CASTON.—Yes, it had seeds; this shrub was about four feet and a half high.

Mr. FLETCHER.—I should think it would be one of the June berries I have referred to.

HARDY ROSES FOR OUT-DOOR CULTIVATION IN THE COLD NORTH.

Mrs. A. A. Wright, of Renfrew, read the following paper on this subject:

The successful cultivation of the Rose, like the successful cultivation of fruit, is in our northern climate attended with no little difficulty. Besides the natural enemies of this, the "Queen of Flowers," we have in addition to combat the all-destroying demon of excessive and unrelenting cold.

To obtain varieties with sufficient vitality to withstand the rigors of our northern winters, is our first consideration. In this respect, no philanthropist or enthusiastic amateur has ever made a special trip to Russia, or other high latitudes, in search of "never-fails," or "ironclads," and we are obliged to content ourselves with productions of skilled growers and hybridists of America, England and France.

The amateur who contemplates the beautifying of the garden with a bed of beautiful and attractive roses—roses that are to remain in their respective positions during the

entire season—naturally turns in those missionary pamphlets (illustrated catalogues) of the florist to the column headed “Hybrid Perpetuals,” as here the amateur is told, is the list of the hardy varieties, suitable to out-door cultivation. And now comes the first liability to mistake, the name “perpetual” being altogether misleading, in fact it always reminds me of that amusing story told by Mark Twain, entitled “A Touching Anecdote of George Washington,” in which the chief feature is that the name of George Washington is not once mentioned.

So with hybrid perpetual roses, there is nothing perpetual about them, except it be that some of them, like my Francois Michelon, are perpetual rampant growers, and also like some of our good temperance men, perpetual abstainers. For so far as this variety is concerned, I have not yet obtained a single bud or blossom, although it is the most vigorous grower in the garden. But to return now to varieties. Although the hybrid perpetuals are not constant bloomers, they should all bloom freely in the early summer and supply us with a limited number of flowers later in the season. And as it is on this class that we in the north mainly depend, I will give the names of a few, that with us have been the most successful. Of course, we have to protect them carefully with leaves, straw, earth, or some such material.

In the light varieties first for us comes “Madame Plantier,” pure white, medium size, profuse bloomer early in the season, very hardy and vigorous.

Coquette des Alps, medium size, very full, a desirable white rose. In pink we have La France, the most beautiful of all roses, silvery rose, changing to pink, very large, tea scented, a continuous bloomer; it is a hybrid tea, not quite so hardy as the perpetuals. Paul Neyron, deep rose, very full, perhaps the largest variety known. American Beauty, large, beautiful form, very double; color, a deep rich rose, sweet scented.

The Old Province should never be omitted from any list of northern roses, full and fragrant, a vigorous grower.

In dark varieties we have General Jacqueminot, brilliant crimson, large, fragrant, very hardy. Alfred Colomb, crimson, very large, extremely fragrant, one of the most useful for general cultivation, and one of the hardest. Marie Baumann, very bright crimson, large, full of exquisite form, very fragrant; it should be given a favored position. In yellow we have Persian Yellow, bright yellow, nearly full, well formed. Harrison’s Yellow, golden yellow, medium size, semi-double, a freer bloomer than Persian Yellow.

All the moss roses we have tried, are hardy, viz.: Perpetual White, Crested Moss and Pink Moss. In climbers—Queen of the Prairies, rosy-red, large, double, scented; Gem of the Prairies, rosy-red, sometimes blotched with white, large flat flowers, slightly fragrant; Baltimore Belle, pure white when fully opened, hardy and vigorous. In the Polyantha class we have not as yet found any sufficiently hardy for out-door wintering.

In this list I have tried to give distinct varieties both in form and color. They are all beautiful and worthy of a place in every garden.

Mr. MITCHELL.—I do not know that I can add anything on this subject which will add anything to the impression already produced by the able paper we have just heard read, but I will just make a remark or two upon it. I have been very glad since we have been here to note the presence in the room of several ladies, for we are very glad to have the ladies on our side, and to have them to take an interest in these matters, and I can only say I am very sorry Mrs. Wright did not read her paper herself. In regard to the Francois Michelon, a rose which I heard depreciated to a certain extent, with all due deference to the lady and the paper we have just heard read I must say that I think the Francois Michelon must have been purchased as a continuous bloomer from one of those agents or nurserymen who are not very particular, because with me it has been a most continuous bloomer. The worst fault I have with it is that it is hard to propagate, and it is a poor grower, but it is a first-class rose, and a continuous bloomer. As to the other roses mentioned I can corroborate everything that has been said. Paul Neyron is perhaps after all the very best rose we have. The American Beauty which was men-

tioned has had a great rage, and at the present time it is quoted on the wholesale markets of New York at \$100 by the hundred, and selling at \$150 retail, but I have never set so much store by it as many of the older and better known roses; to me there is a certain amount of grossness about it. The mosses that have been mentioned, the crested moss rose in particular, are first-class, but if you get the crested moss from an irresponsible agent I think it is likely they will sell you something easier to propagate; it is hard to propagate. The old common moss-rose is very valuable also. I have very little to say in favor of the newer mosses; they are much easier to propagate, but not so good when propagated. The Baltimore Belle was mentioned and I noticed it in our "Horticulturist," and in some American horticultural publication there has been a good deal of discussion as to whether the Baltimore Belle was scented or not. The true Baltimore Belle has very little scent. I think generally where people claim they have a scented Baltimore Belle it is Mrs. Hovy or something of that sort. There are some scented, but I have never seen any quite so perfect or beautiful as the Baltimore Belle. I may say I listened to Mrs. Wright's paper with much interest, and I am sure everyone else in the room did the same.

Mr. DEMPSEY.—I did not quite understand what Mrs. Wright meant by hardy roses. The majority of those roses require protection, without which we cannot grow them. In regard to cultivation, the best way is to fertilize the soil as much as possible; I have never found that we could make it too rich for roses. Then, as soon as they are through blooming in the spring cut them back, prune them right down, which induces new shoots to come out again. In this way we almost invariably have a second blooming in the season. Another point which we find important is to have as much shade as possible; we find that the rose will fade readily if it is not shaded a little from the bright rays of the sun, and if they are shaded by some artificial means, some laths put together with a very fine net over it, or anything of that kind, the shade is very beneficial, and the rose does not fade for several days, whereas they would fade in six or eight hours if the sun were allowed to fall right on them. In the winter we have to protect our roses, and the so called hybrid perpetuals, and the way we do that is by pinning them down to the ground and fastening them there as have been recommended by some for grapes. Sometimes we throw a little earth on, but if it is a tender variety we cover them with evergreens first, then some forest leaves over the evergreens, and then the evergreens again to keep the forest leaves there. You will find by this means none of the tender buds of the rose will rot.

A MEMBER.—Do you find mice troublesome?

Mr. DEMPSEY.—Well, mice are quite easily got rid of just by boring a hole in a block, and making a mixture of meal, arsenic and sugar in about equal parts, and putting this mixture in the hole in the block. The mice will crawl in and eat it, and we readily get rid of them.

Mr. MITCHELL.—As to making the soil rich, while the plants are young it is not well to go to the extreme. Old plants will bear almost any kind of stimulating, but instead of being good for young plants before they are fully established it is injurious. In regard to cutting back to produce bloom, I got carried away with that idea myself; I cut back until I found that I was cutting back at the expense of the root. There is a certain balance between the two things; in growing roses, like everything else, we have to use a certain amount of common sense. Don't cut back so much as to make the roots decay; and you will do that if you cut back too much. Mr. Dempsey's suggestion about mice is very good. They are very destructive, and I have found arsenic better for destroying them than strychnine, the crystals of which, I think, are so large that the mice in some way avoid them. It has been my practice, and it has been very successful, to take a little arsenic and spread it on a knife, and cut a piece of turnip and put it under something, either two boards nailed together or a board along the ground. I have found that just as good as any method I have ever tried. A little frost does not cause the turnip to decay as it does some other vegetables, and if pretty well covered up with snow it will last perhaps all winter. It is one of the best things I have used.

Mr. SCOTT.—The best material I have found for covering roses is mere earth; I find it superior to leaves or evergreens or straw, and it does not attract mice. In localities

where the ground is particularly dry I have succeeded in carrying through tea roses by covering them with six or seven inches of earth, and then covering sods over the top. I have found that succeed pretty well. But all the hybrid perpetuals can be brought through without any difficulty.

Mr. HAMILTON.—I would like to call attention to two roses, one brought out from Russia, and the other from Japan. I have got both of them. One of these roses is the double Japan dog rose; it grows about four feet high, and is even hardier than the old cabbage rose. It requires no laying down or protection of any sort, and the only old rose equal to it in hardiness is one mentioned by Mrs. Wright, the Madame Plantier. The other rose I think is a Japan rose, though I am not sure; I only say so because it answers the description of the Japan roses introduced within the last two years. The flower is about five inches across and very pretty. Most people think that the flower requires to be double. Now, this is beautiful though single, and it has one advantage—it blooms throughout the entire season. It bloomed with me last year from the beginning of June until October. New wood came up and it continued to bloom, and then the flower was varied by fruit, a pretty scarlet berry, even more beautiful than the flower. These two roses are certainly a great acquisition.

Professor MACOUN.—The last rose described by Mr. Hamilton is wonderfully like a rose which comes from British Columbia; it is very abundant there, and certainly is a very fine object.

Dr. HARKNESS.—We would like some suggestions as to how to get the best results from any particular plant, the best way of encouraging bloom of good quality and quantity.

Mr. BUCKE.—The doctor is the very man who can give that himself.

Dr. HARKNESS.—I think not, Mr. President. I am a young rose grower, and a little enthusiastic on that account, but I came here more to learn than anything else, expecting to hear from experienced rose growers. In the matter of cutting back, I don't think, myself, that it is advisable to cut back very short. We are told to cut back; that bloom is gained. I think if we have a good vigorous large bush that we can get more nearly perpetual bloom by cutting back before the bloom appears. You stop the top growth and you will have laterals sent out, and in that way you will have full bloom much more quickly than if you leave your plants to exhaust themselves by having full spring bloom. You will not have so much bloom in the month of June as if you had left your plant undisturbed, but you will have more towards the last of July and the first of August than if the plant had exhausted itself in having a full crop of bloom at first. Of the numerous enemies of the rose bush I only find one that gets the upper hand of me, which is the little borer which attacks the extremity of the young and sappy growth. It bores in for perhaps three-quarters of an inch to an inch, and bores itself out, but it stops the growth of that branch, and in doing that it at once starts out lateral growth. I protect my rose bushes with earth. I protect my teas with earth, and then cover the earth with leaves, and hold these leaves down with brush or anything of that sort. I find that we can carry our teas through our winter here (Ottawa) very well, especially if we have them in a shady place where we have a good, heavy snow drift on them; they came through there very nicely, early in the season. I have found well rotted sods to be a very successful manure for roses. A man living on a farm, as I do, has no difficulty in having sods piled up, and letting them lie a year or two. They are to be used as absorbents, and when you use these decayed sods as absorbents I think you have the very best quality of manurial application for rose bushes, and you also improve the texture of the soil.

Mr. WRIGHT.—What teas did you winter over?

Dr. HARKNESS.—Well, I don't know that I could tell you at present. There were not more than half a dozen varieties; I wintered over all I had, and there was no special selection made. Last year was an exceptional season in some respects; we had early and deep snow, and the ground was practically free from frost all winter. I don't think it would be always possible to winter over tea roses out doors, but I think it can often be done, and I think it can generally be done if sufficient care is taken, because, so far as my experience goes, they come out very nicely. I think there is nothing better than the ordinary cabbage rose; it is perhaps somewhat thrown into the background by the newer

varieties, but as far as beauty and fragrance and quantity of bloom is concerned, I don't think it can be very well surpassed, and I would certainly recommend anyone growing roses to give it a trial.

Mr. HAMILTON.—I would like to ask Professor Macoun how roses in British Columbia differ from those in the western part of Ontario. It occurred to me that when the gentleman was describing his single rose it was very much like our wild rose.

Prof. MACOUN.—There are fourteen species of wild roses in Canada, and the northern species and the Niagara roses are different in the general appearance of the rose.

Dr. HARKNESS.—One trouble that I find in the cultivation of summer roses in the month of August is from insects, wasps and so forth, which prevent by their ravages the proper development of the flower and destroy its symmetry. I find a very effectual remedy for that in the application of a small quantity of pyrethrum. It is very easily applied, and can be used in such small quantities as not to constitute an eyesore on the rose or to make any smell, and yet be quite effective.

Mr. HAMILTON.—I think it might be well for this Association to encourage the hybridization of some of these more hardy roses. I have no doubt that the rose I have spoken of is a perpetual bloomer, and might be crossed with some of the double roses so as to originate a new strain altogether. So far as I know Canada has not done anything in that direction yet, and I think it is something well worthy of the attention of this Association. The Fruit Growers' Association of Minnesota offer tremendous prizes—I think I may use that term—for a seedling apple to be raised there under certain conditions. I think it is \$1,000. Now, while it might not be advisable to offer so large a sum to raise new roses suited this part of the country, it might be wise to offer a prize large enough to induce some amateur to go to the trouble and introduce something new, and it would only require to be started to originate new and valuable varieties.

Prof. MACOUN.—There is a little rose that does not grow much taller than your hand; it grows all the way across from Manitoba to the Rocky Mountains, through the whole prairie region from the middle of June to the last of September. I have pulled it at all seasons.

ROSE NOTES.

The following paper was read by the Hon. Mrs. Lambart, of New Edinburgh :

Perhaps a few remarks—the result of seven years' experience in rose growing, on a somewhat extended scale—may be of interest as supplementing the regular paper on the subject.

In the first place let us realize that it is not against severity of climate, but against the length of time during which the roses must remain covered, that rose growers in Ottawa have to contend.

None of the hardier teas—none of the hybrid teas—none of the hybrid perpetuals—none of the mosses—need ever lose one inch of wood *from cold* if properly covered, but the greatest care and precaution have, in my case, utterly failed to prevent the loss of a large number of bushes every winter from decay.

Dampness gathers where ventilation is impossible—the hot suns of early spring turn the imprisoned moisture into steam, and when the snow is gone and the roses come to be examined, one is aghast at the mouldering blue-black mass of jelly that was once a rose bush, often not more than one or two inches of healthy wood surviving above ground.

This disaster is wholly confined to the hardier roses, which, with their stout woody stems are more readily a prey to decay than the leathery pliable stalks of the tender varieties.

My La Frances (nearly a dozen of them) all vigorous growers, have survived many winters, but have never lost one inch of wood from any cause but the pruning-knife, and the Gloire de Dijon, a pure tea, has passed equally well through one winter quite out in the open ground.

The Jacqueminots (on the other hand), and all that hardy Baroness Rothschild race, and the mosses and the provinces (the hardiest of all), have come out of their winter sleep little heaps of black ruin.

My experience proves that the hardest of the roses (that is my hybrid perpetuals, mosses and provinces), will pass the winter without the slightest injury, quite uncovered, if they are planted near a close high fence, and that if planted quite in the open and left perfectly upright and uncovered the wood will only be killed back to the snow line; as that is about the extent to which they should be pruned, there will be but little damage done to either the bushes or their season's bloom from their winter's exposure.

I have found that, to lessen the risk of decay, it is better not to cover the hardy roses until December, although it is well to peg them down in November. The teas, hybrid teas and polyanthas should be covered in November—and well and deeply covered for at least a foot or more from the stem all around. Leaves, earth, evergreen branches, then more leaves and evergreen branches—a goodly pile,—but for the victims of decay nothing does so well as a very light covering of very dry straw.

In regard to pruning, several systems are recommended, and I have tried them all, with the result that the few concise and simple rules given by George Paul (the president of the English rose growers), have proved by far the best for us as well as for England.

He makes it a rule without exception, to cut out altogether all wood more than two years old, and to shorten the strongest shoots about one-half. Cut out altogether the weakest and the crowding shoots, and the less vigorous branches cut back to the three eyes.

These rules apply to hybrid perpetuals only—Madame Plantier, Charles Lawson, Blairii, and all of that class, should have all the wood that has flowered cut out entirely, directly the flowering season is over, thus encouraging an immediate growth of new shoots from which the next season's bloom will come.

In regard to insects, mildew, etc., I have seen nothing new suggested for some time, but I think that effectual remedies are well known to all rose growers, and only untiring fidelity in using them is required.

It may not be generally known how much common soot will add to the beauty, brilliancy and substance of a rose. It should be well mixed with the earth close to the roots, and a very few weeks will show its benefit.

It is very important to keep the rose beds well mulcted during the heat of summer, and their foliage sprayed as often as possible after sunset.

Her Majesty, which created such a sensation in the rose world some years ago, seems, from all accounts, never to have bloomed in Canada. I have one bush that came from England two years ago. It has grown vigorously from the first, and last summer it blossomed. The bud was very much larger than the buds in the colored picture with which we are all familiar, in fact it was so much larger than any rosebud I have ever seen, that a perfectly true description of it would be quite incredible. Hundreds of people came to see the marvel, and the rose itself proved quite in keeping with the bud, the beautiful reddish tea foliage making a lovely finish to the spray when in its full beauty. But the mildew! worse, even, than the Giant de Battailles. It yet remains to be seen whether this perfectly peerless rose can be grown in a wholesome condition. If not Mr. Evans, of Philadelphia, who paid so much for a monopoly of Her Majesty, will have more greatness in his possession than may be to his benefit.

Merveille de Lyons (that splendid, huge, hardy, perpetual, perfect, white rose), has now been quite long enough in cultivation to be more generally known than it appears to be in Canada, and the roses that our grandmothers grew, and which can never be other than lovely, are still enumerated among the suitable roses for us to grow,—of course they are, but we all know that, and now we are asking for the results of experience as to the most reliable of the newer varieties. George Paul, Ellwanger and Barry, Peter Henderson all give lists which no collection should fail to contain. These lists all differ somewhat, but all agree that Charles Lefebre, the large, fragrant, dark velvet vigorous rose is the grandest of roses, and that everyone should have all that Baroness Rothschild sisterhood, its members being Mabel Morrison, White Baroness, Merveille de Lyons, Baroness de

Rothschild, Mme. Massicault and Baroness Nathaniel de Rothschild. Also that La France must be included, and Alfred Colomb, and Capt. Christy and Pierre Notting and Magna Charta and—but what is the use of enumerating lovely and inviting varieties on which we might wish to try our skill, when the nurserymen have combined against us; and it is simply impossible to know what rose you have until it blooms. The fact that you order Louis von Houtte, and that the rose you get is labelled Louis von Houtte, is of no importance whatever, for, is not Louis von Houtte a difficult rose to grow and to propagate, and does not the bloom of a Jacqueminot correspond to the printed description of a Louis von Houtte; and if you don't know the difference you will be highly pleased at your own success in growing a rose which all authorities pronounce a difficult floricultural task, and so both you and the nurseryman are benefited, are you not? And is he not really after all a real benefactor—opinions may differ, we rose lovers don't agree with him, but there seems to be no help for us, the business is practised so systematically and so universally. If you order a Mme. Norman, as I did one season from three different firms in Canada and the United States—you will be likely to get, as I got from all three, Coquette des Blanches. I had already five Colettes, but that was of no consequence to the noble army of nurserymen, who, in their wisdom had decided that it was better for me to have another than the frail and lovely Norman. For Gabrielle Luizet I get La France, and would one not be very unreasonable not to think that quite near enough. For A. K. Williams, Francois Michelon, Julius Figuer, Countess de Sereneye, etc. You never are sure what you will get—anything will do for an order for one of these. I must, however, make one notable exception—I have never had a rose untrue to name from Ellwanger & Barry, of Rochester, but their prices and the duty and freight make their roses just double the price of English roses, while their stock of the new roses is quite too far behind the times. After years of martyrdom I have found relief and satisfaction, and reliability and cheapness in English roses, which at one shilling (24 cents) each, for large bushes (guaranteed true to name), when several combine an order, supply one with the very choicest stock at net price of forty-three cents per bush. George Paul, of Cheshunt, Herts Co., Wm. Paul, of Waltham Cross, Herts Co., Benjamin Cant, of Colchester, Essex Co., and George Prince, of Oxford, Oxford Co. (who grows exclusively on seedling briar), may be implicitly relied upon.

In closing I would recommend those who have failed to coax such weaklings into vigor as Louis von Houtte, Marie Bauman, A. K. Williams, Julius Figuer, Francois Michelon, Xavier Olibo, and a host of other beauties, when grown on their own roots, or on the manetti, let me beg them to get these from Prince on the seedling briar and await the result without fear of disappointment.

LANDSCAPE GARDENING.

Professor J. Hoyes Panton, M.A., F.G.S., of Guelph, read the following paper on Landscape Gardening :

The art of landscape gardening develops, as a country advances in taste, and on this account is more likely to be associated with an old country than a new. Thus we find in Europe many examples of this art are common, and inducements held out for its application, that encourage and enable men naturally qualified for the profession to study with a view to following it as a life work.

Our American friends have not been long in showing their advancement in taste as well as other things, and supply us with many beautiful examples in landscape gardening, especially along the banks of the Hudson River. Here was an excellent seedbed for the development of this art, and advantage was taken of it by the heralds in this line of work on the American continent. This locality, so favorably supplied with all the most enthusiastic could desire, gave ample scope for the work of following out the principles of landscape gardening. That their efforts were successful is borne out by the testimony of all who have taken a trip down the Hudson and observed the beautiful homes on its banks surrounded by grounds, that are monuments

of taste and skill. From this attractive district, containing so many palatial residences, innumerable examples have been taken to serve as illustrations of what can be accomplished by the possessor of refined taste; and in the form of woodcuts they have adorned many a page in horticultural journals.

With a view to direct attention to a subject so well suited to increase our pleasure in life and to more fully enjoy much that surrounds us in it, this paper has been written. We hope that the time is not far distant, when we shall be able to find many examples in our own country, where nature has supplied so much, that is well suited to furnish illustrations of what can be done by a student in this department of horticultural work.

Our country is comparatively young, its inhabitants have been largely occupied hitherto in securing the necessities of life; but having passed this period, and enjoying many comforts and not a few luxuries, the time has arrived, when a development of taste may be favorably urged. The subject of landscape gardening has not received as much attention as its effects on the culture of a people demands.

It aims at the development of the beautiful in nature, and as such must eventually, to a great extent, affect national life and taste.

A landscape gardener is born and not made; his work is one of thought more than mere physical effort. He must possess more than ordinary talent, for besides having a good knowledge of the materials he is to work with, he must combine with it a superior taste so as to arrange them with the best effect.

True, there are quacks here, as in all professions, men who have presumption to arrange trees, etc., in a sort of haphazard way, and call it the work of skill; but to reach the highest perfection in this art requires attainments of a most superior nature.

A gardener may be very efficient at his work among vegetables and flowers, and yet lamentably deficient to lay out a lawn. On the other hand, we might find a person comparatively ignorant in the cultivation of flowers, who possessed skill to group trees, etc., with very fine effect.

The surface of the earth level, rolling, rough or rugged; a body of water, as lake, pond or river; trees small and large, of every form, and the sky overhead, must be so arranged with reference to each other, that all will blend into one harmonious whole, giving to the eye an ever-changing, attractive scene, viewed from different points.

To do this, it can readily be seen, the director must possess great taste and skill. He cannot work by fixed rules—the future results of his work has to appear before him as well as those at hand; he must see the effect of the growing trees at maturity, on surrounding objects as well as what they produce in the present.

He must be able to use with the greatest effect all that nature supplies, without sacrificing the *natural* for the sake of the *artificial*.

Natural lakes are to be preferred to artificial; if only the latter can be obtained they must be made to represent as near as possible the natural; the knoll of nature will be more pleasing than the mound of art; the native rock to the mason's pile. The moment *nature* is sacrificed to *art* a stiffness becomes apparent in the scene and much of its beauty is lost; hence the need of using as far as possible all that nature supplies before the tools are introduced to give the *artificial* a place in the picture.

Cowper deprecates a tendency in his day to make art triumph over nature. He refers to one Brown, a celebrated landscape gardener, who stopped at no obstacle in the way of adopting the *artificial* with little reference to what could be done with the natural surroundings. The poet, in his poem "The Task," says:

"Brown appears. The lake becomes a lawn;
Woods vanish, hills subside, and valleys rise;
And streams, as if created for his use,
Pursue the track of his directing wand:
Sinuous or straight, now rapid or now slow,
Now running soft, now running in cascades,
Even as he bids. The enraptured owner smiles,
'Tis finished. *And yet, finished as it seems,*
Still wants a grace, the loveliest it could show."

Now, though a true landscape gardener may be difficult to find, and one cannot be made by studying the dry principles of the art—yet a knowledge of these leading

truths, and observing to what extent they have been applied on grounds, which may come under our observation, will enable us to enjoy the work of others, so as to see in hill and dale, expanse of water and rugged rock, much that is interesting and attractive—much that never would have been noticed had we no knowledge of these principles.

Though never called upon to use this knowledge further, than to be able to see the beauty which can be developed from surrounding objects, and to thoroughly appreciate a fine landscape, the subject is well worth our attention and study.

Often much might be added to the view of a sheet of water by a proper arrangement of trees in the vicinity.

A view of the sky is much improved and modified through trees well arranged; in fact the beauty of all natural objects greatly depends on how they are presented to the observer.

The modern style of landscape gardening is widely different from the ancient. In the latter great efforts were made at regularity in form and symmetry in shape, and every object, especially trees, indicated a labored attempt to make them somewhat of a geometrical design. The pruning knife and shears were never idle; trees took the form of spheres, cubes, pyramids and many other shapes which presented themselves to the fancies of the gardener. A stiffness pervaded the whole scene, which impressed the observer more with the amount of work it had required to make these designs, than the beauty shown in the form.

As the art of landscape gardening advanced a higher ideal was presented to the student, who adopted the modern view. He sought to imitate nature, and by following her, attain the beautiful and picturesque. The *beautiful*, being characterized by curved and flowing lines, is produced by outlines whose curves are flowing and gradual, a surface of softness and a growth rich and luxuriant.

The *picturesque* shows lines of more or less irregularity, with an abrupt and broken surface, and growth displaying a wild and bold character. To reach the best results in securing these, it is necessary to have variety, but at the same time unity, and a blending of all the parts so as to obtain a harmony of these in the whole scene. While attention is given to the effective production of the whole, at the same time a proper connection of the parts is to be observed.

The principal objects of interest to the landscape gardener are :

1. *Trees*.—The variation in size and form can by the skilful hand be placed in the most effective positions. Some are round headed, some oblong, some pyramidal, some dropping, and others spiry-topped, all producing excellent results when placed in the proper position. Though the sky covers all, yet the glimpse got of it through the spreading branches of a tree is often very beautiful indeed; consequently it is sometimes well to shut off a portion of the whole in order to intensify the view of a part.

2. The ground presents many features which can be worked into beautiful effect in a landscape. It may be rolling—level, hilly and rough, and advantage of each condition taken.

To attain the beautiful a level or gently rolling surface is to be used in preference to the hilly and rough, which more properly belong to the picturesque.

A road to the residence is a very essential feature in a well laid out ground. It was once thought, that this should lead directly to the house and by the shortest way; now taste demands, if at all possible, it should be more or less curved. The direction of the road is important in the scene, as it will present the parts in the most effective way in passing through the grounds.

Trees should be so arranged in reference to it, that there should always be some part of the building in sight, and as the visitor continues his approach the view keep changing until the whole is in view. It spoils the effect very much if the same part is seen from the beginning to the end.

3. *Water*.—Whether in the form of lake, pond, river or rivulet, in the hands of the skilful supplies much to adorn a landscape.

The appearance of the water from different points; the natural outlines of its shores; beautiful walks, that may be made to skirt it, and meander away to other parts, all can be so arranged as to form a very attractive scene. Few objects afford better facilities to render a scene effective than the presence of water.

4. *Rocks*.—The occurrence of these supplies favorable conditions to the gardener, and gives scope especially for the development of the picturesque, which blended with the beautiful gives all the most exacting could desire.

To use all these conditions to the very best results in making a landscape pleasing to the eye and a subject well suited to develop noble thoughts in the mind, lies in the domain of landscape gardening. To be successful in this I am quite sure from what has been said any one will admit, that this art requires no ordinary talent, and as already noted at the outset, such a talent falls to the lot of few. It may be improved, but can hardly be formed by the adoption of fixed rules. In Canada there is much room for a development of greater taste in the arrangement of grounds around many homes. Nature has done much, and it now remains for art to add to this, and render these places more attractive.

Our country is young, but we are advancing, and it does appear that one of the signs of progress is a development of taste. To make a few suggestions that would serve to introduce the subject of taste in the arrangement of grounds for discussion by the members of the Fruit Growers' Association this paper has been written. The task has been undertaken unfortunately at a time when there was not the leisure necessary to do justice to the theme; but I hope a few thoughts have been given that may supply food to observing minds.

Mr. CASTON.—I think this is a very important question. Although we know agriculture is the most important industry, there is a tendency now-a-days for farmers' sons to get away from the farm, and the consequence is that while the professions are overcrowded, the work of the farm is regarded as drudgery. Now, I think one of the best ways of curing that evil is to endeavor to make the home attractive. You see very little landscape gardening or attractive homes among the farmers, and if you ask the reason you will always get some such answer as that they haven't the time. Now, I don't know how far that is true, but I think they might find time to do most of it, and that by making the home attractive, they will succeed very effectually in keeping the members of the family at home. I was talking a short time ago with a gentleman down in our neighborhood who is quite a successful farmer. He had a lot of little boys running round him, and he said, "I want to make these boys farmers; I want to make them believe that this old farm is the most attractive place they can find anywhere in the country," and I think that is the way farmers should educate their children, so that the children can point out their home with pride, and say, "That is where we live." It does not matter that a man has not a very grand house if his surroundings are beautiful; that makes all the difference. A man may have ever such a nice house standing in a bare field without any natural surroundings of beauty, which is not nearly so pleasant a home as a much less pretentious house and grounds that are laid out with taste and an eye to the beautiful. In some of the older counties a little is being done in that direction by farmers, but as a general rule, you will find that landscape gardening is confined to the cities and towns in Canada. I think that ought not to be, and I think if there could be any way devised to induce the farmers to follow the example of the towns and villages, it would be of great benefit to the country at large.

Mr. SCOTT.—I scarcely claim to be landscape gardener. I have laid out a place of twelve or fifteen acres according to my own ideas. I think there is no part of the world in which such facilities are found as here for landscape gardening. Our country is so beautifully diversified, hill and dale; mountain and valley; unruffled lake and murmuring stream are everywhere to be seen. But speaking more particularly of those who come from the colder portions of the country, where the snow covers the ground for three

or four months in the year, I think it is very much to be regretted that more attention is not drawn to the great beauty of our evergreens. Spruces, pines and cedars are unequalled in beauty, and it is seen most in the winter season. As a rule, our evergreens are grown in clusters, the individual development of the tree is not promoted. No one can see the charm of a perfect spruce unless it is grown in an open space, and has a certain circumference to itself. There are some evergreens, such as hemlock, for instance, which do well in summer. I think Mr. Fletcher referred to some of them, and they are things of beauty all the year through. In this part of Canada, in eastern Ontario particularly, there is nothing which so diversifies the winter scenery as evergreens; they present a relief to the eye in our winter landscape which has a value scarcely, I think, appreciated. In planting orchards, I should advise everyone to plant one evergreen tree to every four or five fruit trees. It is wonderful the influence they have upon the surrounding deciduous trees; it is remarked that it is always warmer in the vicinity of evergreen trees. Those who have driven through evergreen forests have noticed that it is warmer there. That, no doubt, is partly owing to the protection from cold winds, but I have also noticed in the open country that the snow invariably left earlier in the vicinity of evergreens, and my success, whatever it amounts to, in growing fruit, is largely due to the fact that I have dotted my apples over with evergreens; not alone in hedges, though I have some in hedges, but mingled through the garden, where they add very much to the winter beauty; they make the garden a pleasing spot to look at, even in the winter season. It is not pleasing to look over the orchard when the leaves are all off and the trees are barren, but if you have evergreens dotted through, not in symmetrical proportions, but just where the eye will fall on them as it takes in the panoramic scene around, it is wonderful how attractive the winter scenes of Canada can be made. I may say, that upon one occasion, I put in a hedge which was certainly five or six hundred feet in length, and did it all in three days. I dug a trench first about two feet six inches by eight inches, and just sent the men out to the woods with the waggons and they brought in the evergreens on a rainy day, which in general is the time I should recommend—a rainy day in June. I do not think I lost two per cent. in putting in that particular hedge. I mention this merely for the purpose of illustrating the facilities there are in this country for planting evergreens. I have very few foreign evergreens in my grounds; almost all of them are indigenous to Canada, and I simply got a few out of the woods when they were small trees, and I find no difficulty whatever in making them grow, bearing in mind these two important points, that according to the locality either the end of May or the beginning of June is the best time—I have moved them every month in the summer, but in the months of July and August much more care is needed, but if you have a rainy day, and I would not advise you to put them in unless you have, the chance of loss is very trifling—and that in moving them from place to place in your grounds, the sun must not be allowed to play on, nor the driving winds to blow on the roots. There are few places in Canada which might not be made picturesque if a few evergreens were interspersed over the lawn, orchard or garden. I think in an orchard in eastern Ontario, apart from the beauty and the little ground they occupy, their influence over the deciduous trees would make them very valuable. In laying out an orchard, I put in every fifth or sixth tree, so arranging them that they break the monotony of the ordinary line of evergreen. Then, of course, there are other beautiful trees, the maple and elm, which grow all through Canada. This is a subject upon which much might be said, and which might be discussed at great length. It is one of those things, however, in which you have to instruct the people by example. We have just listened to a beautiful paper, very ably written, and which I hope will be reproduced, but in order to induce people to make their places look beautiful, we have to do our share through the eye, by the perceptive faculties, by setting before them a good example. We know what an influence the parks and squares in cities have exerted, even on people living in the country, and that is the reason all leading cities, not of this continent alone, but in the Old World as well, beautify them. People are influenced by what they see. No human being is so low as not to be influenced by the sight of beauty, and it is our duty to do our share as we have opportunity, and avail ourselves of every chance to add to the beauty of the world in which we live. I am very glad to do my share, and I am

sure that all here who have a taste in that direction will have similar feelings. The culture of a taste of this kind always creates a refined and elevating feeling, and I am glad to say that in Canada this feeling is growing, and is to be felt all over the land.

THE FRUIT EXHIBIT.

The following gentlemen were appointed a committee to report on the exhibit of fruit :—Messrs. W. W. Hillborn, R. B. Whyte and P. E. Bucke.

AN ADDRESS OF WELCOME.

On the opening of the evening session Mayor Stewart, on behalf of the corporation and citizens of Ottawa, delivered the following address of welcome :

Mr. President, ladies and gentlemen, on behalf of the citizens of Ottawa I desire to tender you a most hearty welcome on the occasion of your meeting here. Apart from the official position I hold, I wish to tell you, sir, and the members of your Association, that I take a deep and warm personal interest in the prosperity and success of your Association. You have done a great deal of good, not only in this country and the United States, but also in the old country, in disabusing the minds of people as to the climatic character of our country. I have visited the old country three or four times, staying there for long periods—on one occasion nine months—and the greatest difficulty I had to contend with was in speaking with people in different parts of England and Scotland, who imagined that we had a country only fit for Indians and half-breeds to live in, and that so far as growing fruit and civilization was concerned we were away behind. Now, sir, I think that idea has been pretty much dispelled by the large and magnificent display of fruit made by your organization in the old country at the Colonial Exhibition. I had not the privilege of being present at that Exhibition, but a great number of my friends who were there tell me that that fruit display did the greatest credit to Canada, and I believe it very materially stimulated emigration to this country from Great Britain. Having accomplished so much good in that way in the past, what may you not expect to do in the future? At the Centennial Exhibition, too, which I had the pleasure of attending, you made a most admirable show, and I am told that last year, before the American Pomological Society at Boston, you made a most creditable exhibition. Taking these things into consideration, I think, sir, that your Association deserves the greatest encouragement from all persons who take an interest in fruit growing, and have at heart the interest of this Canada of ours. I am very sorry indeed that you could not have visited our city in the summer time, because we have now something which will attract your society—I mean the Experimental Farm. That farm is ably managed by gentlemen who have always taken a deep interest in all horticultural matters; I refer to Prof. Saunders, Mr. Hillborn, Mr. Fletcher and some others. I hope on some future occasion you will be able to visit us in the summer so that we can show you what can be done in Ottawa in the line of fruit growing. I thank you very much for the kind interest with which you have listened to my few imperfect remarks, and am glad to have had the opportunity of being here to-night. I again extend to you a very hearty welcome on behalf of the city of Ottawa.

The PRESIDENT.—On behalf of the Ontario Fruit Growers' Association, Mr. Mayor, it gives me very much pleasure to reply to your kindly remarks. We have worked assiduously in the past to educate the people of this province, and I can assure you that such kindly remarks as you have made to-night are most grateful, and as I said before will stimulate and encourage us in this great work. It has afforded me a great deal of pleasure to visit your city, even at this season of the year, and it is our intention, as you suggested, on some future occasion, probably not far distant, to visit your city again as an association at a more favorable season. We follow with much interest the experiments which are being carried on at the Experimental Farm here under the super-

intendence of Prof. Saunders and his staff of assistants. We look upon this as a most decided step in advance, and one that will materially strengthen our hands. Prof. Saunders was one of the ablest and most energetic officials of this association, occupying the chair for several years in the most acceptable manner. When losing him we felt that we were losing one of our best men, but we felt at the same time that in assuming the responsibilities of his present position he would strengthen our hands even more, perhaps, than by direct connection with the association. I thank you again for your most kindly remarks and trust that at no very distant day in the future we may again visit your city, until which time I trust your citizens will maintain the same lively interest in our association that has been shown so markedly during our prssent visit.

THE QUESTION DRAWER.

The following subjects were discussed from the question drawer :

BEST GRAPES FOR COLD LATITUDES.

QUESTION.—Will Mr. Charles Gibb give us a list of the grapes he prefers ?

Mr. GIBB.—First the Delaware, then the Brighton, next the Worden or Herbert or Arminia. (The Herbert is Rogers' 44). My preference is rather for the Worden ; next comes the Lindley, (Rogers' 9) or Massasoit (Rogers' 3) ; next the Duchess. When grapes were up before I noted down one or two new varieties, very little grown. First of all comes the Chasselas ; I don't know if it is the same you call the Chasselas de Fontainbleau. The Concord Chasselas was produced some years ago by Mr. Campbell of Ohio, who sold it out as being good for nothing. However, it is a good sized berry, and a literal sack of juice, rich and sweet. The Concord Muscat, also by him, produces a fair grape ; I fruited it in 1886 but not in 1887, I only had fruit one year ; it is a little tender, and we had slight frost last year. Another is the Rochester, of Elwanger and Barry, which is very red with a very large bunch, the largest I have ; I always put the Rochester in for the heaviest bunch of red. I have been away a good deal, and it has been allowed to overbear, but in spite of that I always get my largest bunch from it. They are of fair, good quality. The Munroe, also of Ellwanger and Barry, is a grape of very fair quality, rather small, but a long and compact bunch. Then Rogers' 502 is a fair sized bunch, sweet with a little acid. I may say that my place is on a hillside, exposed, about forty miles east of Montreal and not more than four miles south of it.

BEST APPLES FOR SHIPMENT TO EUROPE.

QUESTION.—What varieties of apples are the best for shipment to Europe ?

The PRESIDENT.—If I were answering that question as regards to varieties that are grown or can be grown here it might be difficult for me to say, but I can tell you the varieties which we find command the highest prices in Europe. I will begin with the Ribston Pippin, the Blenheim known as Blenheim Orange, then King of Tompkins County follows close upon its heels. If you want to go earlier than that take the Cravenstein, but these command the highest prices. Then the Northern Spy and Twenty-ounce come together ; this Cabashea, or Twenty-ounce Pippin, has come up wonderfully in the British market. The American Golden Russet is up well, but the difficulty about them is that shippers as a rule ship all the standard winter apples at the one time, and the result of that is that they don't get the proper value for the American Golden Russets. The Russets should not be shipped until after the first of January ; they are not wanted in the old country until after that, and where storage can be had by all means store the American Golden Russett until after the first of January, and then the

shipper will get the full price. The Rhode Island Greening came up very well in price this year. It has been considerably below the Baldwin, but is now about even with it, or nearly so. I look upon the Baldwin as one of our best paying apples in the west on account of its keeping qualities and its shipping qualities, though I would not be in the least surprised myself to see the Baldwin go out entirely from the British market on account of poor quality; for we find that people in that market are looking much more to quality now than they used to do. They used to consider color almost entirely and never questioned the quality of the apple. They did not seem to know anything at all about that, and they don't know very much yet, but they are learning, and I believe there will be a considerable difference in grading apples in a few years, and such apples as Ben Davis and the Baldwin will go comparatively out of the market and the high quality apples come in and come up in price. I believe prices are not at their height yet. For several years past they have been advancing very steadily, for our only competitors in that market are the Americans. This year we took a jump far ahead of them; our best fruits on the British markets being worth from three to five shillings a barrel more than their best brands of apples at the same time, and in a great many cases even more than that. In fact as soon as they know it is a Canadian grown apple they want it at once, and if it is a fine sample they want it regardless of price, and they are bound to have it.

Mr. BUCKE.—How do our apples compare with the same varieties grown in the Old Country?

The PRESIDENT.—You would scarcely recognize them, so great is the difference. True, there is something of the shape and color, but the color is much brighter here, and the size is altogether beyond theirs. They only get about one-half the size we get in any of our varieties here, and as for color in highly colored apples, the color there is very sickly. It is not that bright, lively color which we get here. The only apple I took the slightest fancy to in that country was one called the Wellington, a winter apple there, and apple growers there told me it was the only apple they were making any money out of, of their own growth. I liked the look of the apple, even as grown there. It is fully as large, possibly even larger than the Baldwin, and had a much livelier color, even there, than our Baldwin. I think in this climate it would have a still brighter color than there, and possibly some change in the quality; and even there I considered the quality was pretty fair. I went to a man there to get some scions. He said he would give me some, but he said, "Don't allow any of the wood of that apple to go to Canada." I said why. "Well," he says, "it is the only apple we can make anything out of here now, and if those Canadians get any, we are done." I at once informed him that I was a Canadian, and he then refused me. I told him I was going to get that wood, and I did. It certainly made a most magnificent growth. I consider the Wellington, as grown in England, better than the Baldwin as grown here, and it is an apple that will cover the same season as the Baldwin.

Mr. A. M. SMITH.—A gentleman in St. Catharines had a few trees and it is entirely new to me; I am much taken with it.

Mr. GIBB.—If you could have added the Duchess, Fameuse and Alexander, I should have been very glad.

The PRESIDENT.—I didn't intend to slight Quebec by any means. There is no question about it, I don't know any apple we have that would bring a better price in the British Market than Fameuse if we could only get it there in perfect order. I did think of suggesting the Fameuse in small half barrels, such as they use in Virginia for Newton Pippins; they would look very fine, and could probably be handled a little better. They want to be shipped in smaller quantities than the common apple barrel, because they seem to crush badly, although we did have some this last season that arrived in pretty good order. Then the Duchess would sell at very high prices, I have no doubt about that; in fact, I have tested the Duchess myself; some specimens were got over in very good order indeed. We had some at the Colonial which arrived in very fine shape, but the Duchess had to be picked considerably on the green side. If there were only a system of cold storage on the steamship lines there would be no difficulty whatever in shipping and landing Duchess apples in perfect order on any of the British markets.

Mr. HAMILTON.—Speaking of English Apples, did you see the King Pippin?

The PRESIDENT.—Yes.

Mr. HAMILTON.—The reason I ask is that last time I was with our society in Montreal the question was asked before 100 fruit growers what was their best apple, and without exception they put the King Pippin first. It is an apple almost indistinguishable from the Cellini, and I would like to know if that is correct. The Cellini, as we grow it, is pretty large, about as large as the Alexander, but a little longer.

The PRESIDENT.—It does not narrow into the eye like the Alexander.

Mr. HAMILTON.—No. The Cellini at my place is all right; it has proved the hardest of all the old apples I have had, leaving out of question the Duchess. It is a very fine tree and a heavy bearer, and the fruit is fine in size and quality.

Mr. DEMPSEY.—I have seen the Cellini and King Pippins tried; you will almost invariably find that the King Pippins produce some enlargement on one side, while the Cellini is perfect in form. Nor is the King Pippin so highly colored as the Cellini; they are a distinct variety. Now, I wish to add a word or two in regard to the shipment of apples. If we can ship in small half barrels, I believe there is less risk in shipping such varieties as the Duchess of Oldenburg, Fameuse, Wealthy and Gravenstein. If we ship Golden Russets in the month of January they are liable while being transported by rail to Montreal or any other point where they are to be put on board ship to become very cold—perfectly chilled, and sometimes perfectly frosted; then, when they are placed in the body of the ship, where a turnip in ten days would grow an inch and a half or two inches, they are sure to condense moisture from the warmer atmosphere, and the fruit becomes saturated with water, and in eight or ten days a small barrel of fruit would be spoiled. Now, if they start in the fall in good order there are very few that spoil. By packing in small barrels the pressure is not so great. I believe there is less risk in shipping fall apples than in shipping winter apples.

Mr. BUCKE.—Could you not ship winter apples in the fall?

Mr. DEMPSEY.—They don't command good prices in the fall. The President rather gave us to understand that Ben Davis and the Baldwin were going out of the market. Now, I want to inform you just here that my Ben Davis stood at the top of the list this year in England, and it is hard to get around that. There is another variety which stood very high this year,—the Westfield Seek-no-further, which commanded very fine prices. Then there is another apple of which we have never been able to send any before this year—the Mackintosh Red, which is a beautiful apple, and it commanded fancy figures.

Mr. BUCKE.—What do you call a fancy figure?

Mr. DEMPSEY.—I call thirty shillings a barrel a fancy figure, and it is a price that will pay us very well. We sometimes have to put up with half or a quarter of that. There are several other varieties coming into notice. Respecting Cox's Orange Pippin, along about Christmas and the month previous to Christmas they were unpacking them at Covent Garden and putting them in hampers; what they there call a hamper is supposed to contain four even peck measures, but really does not hold a great deal more than three pecks; and they have been quoted there at fifteen shillings a bushel this year; that is more than thirty shillings a barrel. I haven't seen any quoted so high this year as Cox's Orange Pippin.

The PRESIDENT.—Mr. Dempsey has misunderstood my remarks as to Ben Davis and the Baldwin. I said that people in the Old Country were looking at quality so much now that I believed the time was coming when those apples would go out. They have not gone out yet, although Rhode Island Greening is almost even in price with the Baldwin now. We know that these apples are poor in quality, and I believe that in Britain they will eventually come to that conclusion.

Mr. SMITH.—Some of our most successful grape growers are getting higher prices for the Champion than for any other variety.

BEST STRAWBERRIES FOR THE VICINITY OF OTTAWA.

Q.—What kinds of Strawberries succeed best in the vicinity of Ottawa?

Mr. P. E. BUCKE.—I don't think I can give much information about the Strawberry, as I have not any ground of any extent, and I am sorry to say that although I believe Ottawa is about the finest place in the world to grow strawberries, there is not a strawberry grown in Ottawa. We get them almost entirely from the west and from Brockville. I think our friend here who deals in berries can tell you more about what is not grown in Ottawa. I think if a man started here with a few acres he would make a fortune. The strawberries we get here are brought from a distance, and they are not what they ought to be. Mr. Scott grows a good many, but unfortunately he is not here to-night,—the Hon. R. W. Scott.

Mr. HAMILTON.—My place, as I think I have said before, is about half way between Ottawa and Montreal, and I have grown about half a dozen varieties. I have not hitherto been growing them for market, but last year the man who keeps the station restaurant took some of them. The varieties I had were Minor's Great Prolific, Mount Vernon, Duchess, Manchester and Sharpless, and Bidwell. I think of these Minor's Prolific bore the most heavily. The Sharpless berries were larger, some of them being two and a half inches in diameter, and would make two or three mouthfuls. The bed that bore so heavily was only two years planted. It was made from poor soil, made up with swamp muck that had been put up for a couple of years. We took off the patch, we had ten rows about an acre long, ten quarts a day for about a fortnight; that is at the latter end. We used them very largely ourselves before we began to sell them, because we didn't like to see them going to waste, and we also made a distribution of them among the neighbors. I think we had probably 250 quarts off the patch. I would put Minor's Prolific first, and the Sharpless second, and the Cumberland, which I think I omitted mentioning, third. The Mount Vernon did not bear very heavily, but it is a delicious berry; and last of all I put the Bidwell, though it didn't have exactly the same treatment as the others, I kept it apart; it might have done as well as some of the others if it had been grown with them. I think, as Mr. Bucke has said, that it would pay any person to begin growing for the Ottawa market at the rates that these turned out to be.

Mr. O'CONNOR.—I have not grown many strawberries. In regard to the Sharpless, although the berries are very large, I do not think upon the whole that it is a very desirable variety. I think the Wilson is good amongst the new varieties, but of course I am not experienced. Mr. Bucke's remarks about there being no strawberry growers here are very correct, our berries all come from Brockville and the west. It is very surprising to me that our gardeners should allow this, and I hope this discussion may have the effect of inducing some of them to make a start.

Mr. CASTON (Craighurst).—The nature of the remarks just made make me almost inclined to come down here and start strawberry cultivation; and I certainly think there is a great opportunity for some one to make money here. It seems to me that if you can grow such grapes as we have seen here to-day, you should be able to grow magnificent strawberries. A gentleman here to-day spoke of the shortness of the season. Now, I think the strawberry season is longer than the raspberry season, because you can get early, medium and late; sour, sweet or go-between. In our locality we have nothing better than the Wilson, which is something like the Concord grape for hardiness, crop, and standing transportation; I don't think there is anything yet that can beat it. But you don't want to eat the Wilson before it is ripe; a good many people judge harshly of it because they do so. If you want something sweet I would recommend the Sharpless. I have been surprised at hearing so little said about the strawberry here, and one gentleman in speaking about raspberries seemed to be against the strawberry. That is not my experience at all, nor do I think it is that of anyone from the west. I think there is no other fruit that will produce as much for the ground it occupies as the strawberry.

Mr. WHYTE.—After the uncomplimentary manner in which I spoke of the strawberry this morning I suppose I should hardly say anything about it now. Still I have grown a good many strawberries here, and I gave them up, not because I didn't like

them, but because I like the raspberry better. When I did grow them the Wilson succeeded very well, but I think it is surpassed by the Crescent Seedling. The only berry I had good success with in point of quantity was the Dominion, it was perfectly satisfactory, a large berry of first-rate quality. The Sharpless I never got much out of, we got large berries, but very few of them.

BEDS AND BEDDING PLANTS, LAWNS AND BORDERS.

Mr. N. Robertson, Superintendent of the Government grounds at Ottawa, read the following paper :

Lawns are especially difficult things to deal with, and never can be properly dealt with unless the subject is before you, owing to the diversity of positions and surroundings which must always be taken into consideration. Borders are generally treated as if they were the dumping ground of all sorts of material with regard to any particular position. To detail how to fill a border properly, I consider a far more difficult task than beds. There are so many things to be thought of, such as to insure a general dispersion of flowers over it during the season, with a proper regard to the blending of colors, and many other material points. Besides this, it is considered more of a permanent institution, as perennials are mostly used in its construction, it requires much maturer thought to plant it properly. Beds then form part of my subject to-night. Time will allow me only to take a passing glance at what such designs should be. There is a rule laid down for this, but I will not say whether we adhere to them or not. It is that designs of beds should always be in keeping with the architecture of the building ; that is to say, if they are Gothic, then the beds should be the same, and so on with the other styles of architecture. There are few studies which open up a wider range of thought than that which bedding plants do ; for, although a certain number is called by that name, yet there so many that can be used for this purpose that it is hard to strike a line between them and say what is or what is not a bedding plant. There is nothing, I can assure you, can be more pleasant to me than to say anything that will be instructive or useful to your association. Bedding plants, then, covers so much that I shall be able only to deal with the most prominent and useful. To enable me to better explain the different positions they hold towards each other, I will divide them into different sections, by calling them dwarf, medium, tall and flowering plants. Although they can be used in conjunction with each other, grading them from the centre or back ground, yet I prefer them separate for my present purpose, so as to give you a more decided idea of the work they are best adapted for, and make myself more easily understood.

First, then I will take up what is known as *Carpet Bedding*. This is, perhaps, the most expensive of all bedding, as it requires such a large quantity of plants and labor to fill a bed. I cannot refrain from speaking of a recommendation given some years ago in a daily paper, which has always taken a great interest in horticulture and done much to benefit it. When this system of bedding was looming up, it had depicted a bed that was seen in one of the English parks on an extensive scale. To carry out this recommendation, gentlemen were told to ask their wives to forego a silk dress for that season, putting its cost into plants that they might have such a bed. This bed contained no less than fourteen thousand plants ! I will leave you to compute the cost at the lowest possible price for which they can be had, and see how many would undertake such a bed. I do not want you to infer from this that you cannot have a carpet bed at a very small cost.

This system of bedding may well be said to have gotten the better of good judgment. The great trouble with it has been that it has driven so many of our flowering plants from our gardens. But the tide has now turned ; and some writers most forcibly condemn it altogether for this very fault, and because it contains so few varieties. Although they were varied in design, yet it became monotonous and wearisome to the eye. But I should be sorry to see it driven from our gardens altogether. As there is no part in bedding that can better show the good taste and intelligence of the party than this can,

a limited amount of it gives diversity of position and a varied dispersion of plants. No one should attempt this sort of bedding on a large scale unless he has a good command of glass to carry a considerable stock through winter, for some of the plants being tropical, require a high temperature, and cannot be kept over without it. This is also a material point in the cost of carpet bedding.

Foremost, and perhaps the best and most prominent of all bedding plants in the dwarf section is the *Alternantheras*, of which there are many varieties, but the best and most desirable to use in the red colors is *Parychoides Major*. This variety is of later introduction than many of the others and far exceeds them in brightness of color, and the one I prefer above all others of this shade. In the yellow, there are only two varieties that I know of, *Aurea* and *Aurea nana Compacta*, the last far exceeds the other in every respect, compacter and of a clearer yellow. These are all the colors required of them, as none of the other varieties can so effectively fill their place. They are a tropical plant, native of Buenos Ayres; the name alludes to the anthers being alternately fertile and barren. The more exposed the position, the brighter will their colors show. Evade putting them either in a shady position or in damp cold soil.

Next to them may be placed the *Golden and Silver Thymes*. There is also a green variety, but the first two are the most in use for bedding purposes. Like the *Alternanthera*, its growth is compact, but it differs in constitution, being hardy in parts of the Dominion, but not so here; it has to be housed during the winter as the other, and kept in a cool dry temperature. It is a native of Spain, and has become naturalized in Britain. This plant is admired for its smell and is extensively manufactured and used for seasoning purposes, that is to say the green variety.

Pyrethrum Aureum, or Golden Feather, as it is commonly called, is a hardy perennial, which may be taken up in the fall and laid in some sheltered corner covered up, and taken up and divided in the spring into many plants, giving you a large quantity of them, but the better plan is to raise it from seed every year, as you will have brighter color from seedlings than from the old plants. It is unlike the two former in this respect, it will not look well under shears' trimming, and instead of using the shears pull off the straggling leaves by hand that get out of shape. There are other varieties of it, but I have found them no improvement on this one.

Leucophyton Brownii is what may be called the whitest of all plants. In looking at it, you would almost think it was silver wire, and is most beautiful when well developed; but upon the whole, it is not a plant seen much in use because of its slow growth and difficulty of propagation from cuttings; it takes two years to have good plants, and although it makes a line or band of much beauty, will never be popular.

Salvia officinalis is a white and green-leaved plant with much larger leaves than the former which I have described. It is also of taller and less compact growth than any of the former, but, when on rather a poor soil with plenty of sun, it makes a very pretty line. It must be trimmed into shape with the knife which it bears well. It is a native of Mexico, but stands considerable frost, but cannot be called hardy.

Achryanthus wallacei can well be made a splendid associate of the last plant. It is not like the others of its sort; it is a much lower grower and the leaves are much smaller, more resembling the *Alternantheras* in their taller forms than an *Achryanthus*. It is of very recent introduction, but, from my experience of it last summer, it promises to become a favorite plant. Its color may be said to be a dark brown. It will have to be trimmed as the sabia, which treatment it bears well.

Cerastium tomentosum, or Snow in Summer, as it is often called on account of the numerous white flowers with which it literally covers itself in summer. Its light foliage is what classes it amongst these plants for bedding purposes. It is a perfectly hardy perennial, and although it looks best when not allowed to flower, it will clip into any shape, yet it does not care to be removed frequently, which mars its respectfulness as a bedder considerably. Its best position is as a border around a bed where it may stand several years. I have had it trimmed into a half-round shape so nicely that parties would ask if it was stone, so compact and close will it become.

Echeverias are plants much used in this kind of work. Planting is all the care they require. Like all this class of succulent plants their situation must be dry and warm, as

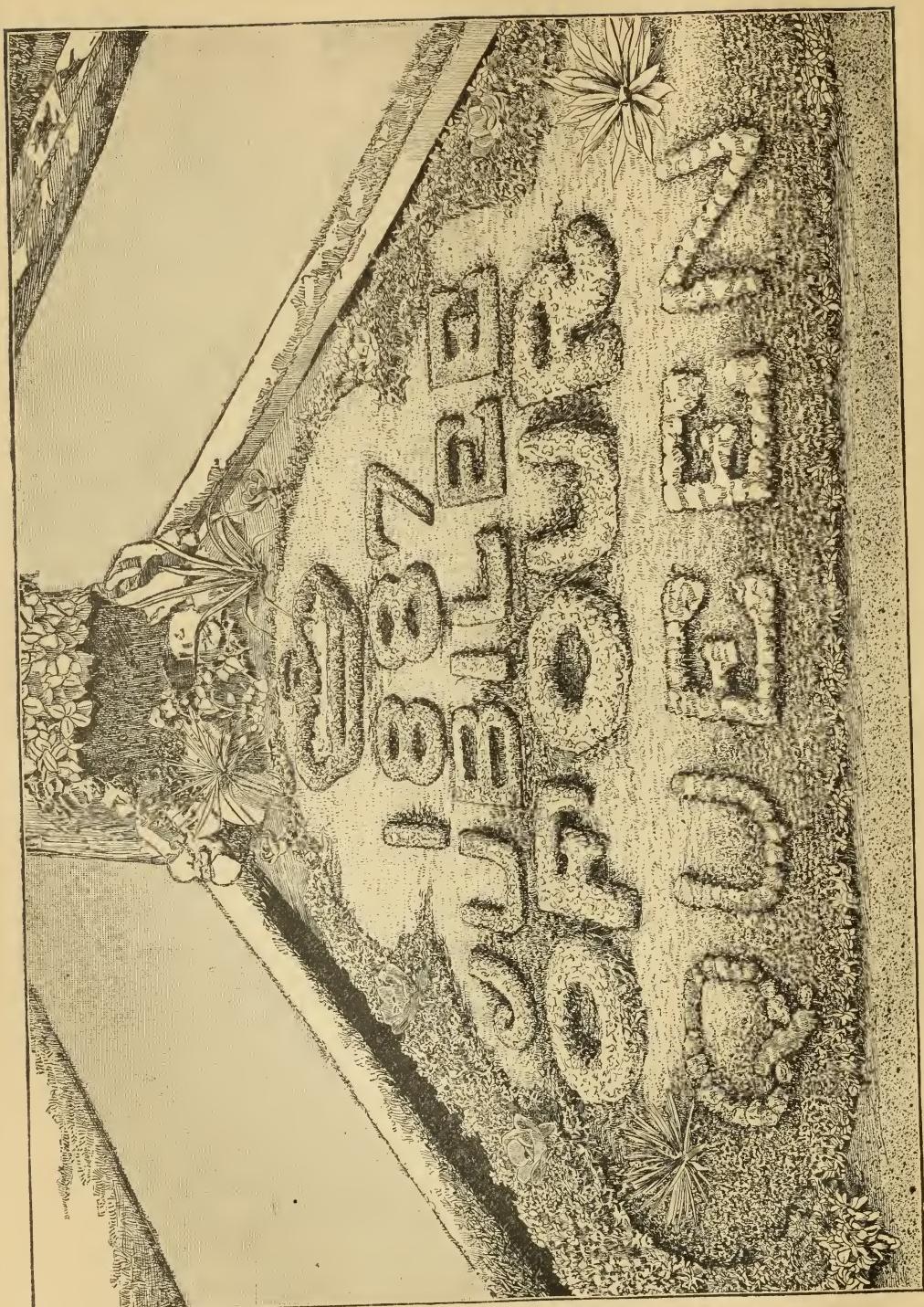


PLATE I. See page 51.

they are very tender and will not stand the lightest frost, being natives of Mexico. Damp positions must be avoided for them, or they will rot. There are many varieties of them, but I will only select two of them ; (1) *Secunda*, of a dark green color and a more robust grower than the (2) *Secunda Glauca*, which is noted for its bluish green shade. Those plants throw out numerous offsets during the summer which should be taken off in the fall and put into boxes of sand. They will soon root and make the best plants for next season's work. Any dry corner in the hot-house will suit them, near the light; a large quantity can be put into a box.

Sempervivum tectorum, or House Leek, and known also as "Live forever," which also is signified by the words *semper* and *vivo*, from which the name is derived ; and surely it deserves it, for I think nothing in the shape of dryness will kill them. Moisture only will do this. Unlike the other Echeverias, with which they are often confused, they are perfectly hardy ; the hardest frost seems to have no effect on them. They are propagated from their offsets in any quantity. The old plants are apt to come into flower, and then they die out ; but good sized offsets taken off with the short stem they have, and planted, will not one of them miss. They are natives of the Canary Islands, but may be said, like the thymes, to be indigenous to Britain. There are many varieties of them, some of them very small but beautiful, too numerous to detail here.

Now, I have touched on a few of the most prominent varieties of plants used in carpet beds ; except such as are used for filling figures, or for the carpet ground on which figures are made. Of these there are a great variety of sedums, but I shall take one that is commonly known as Irish moss, *Sedum Acre*. Like the *Sempervivum* there is no kill to it. Many complain of its spreading habits, but of this I do not complain, as I can always with a little attention keep it within the bounds, and I know of nothing that makes a better ground than this does, if you only clip the flowers from it. If you allow it to flower, it will become rusty looking and unsightly ; if it gets too high you can press it down with the hand, or even a piece of board, and it will not show any signs of disapproval. You can tear it into as many pieces as you like, and sow it on the surface of the soil, throwing some earth on it, and you will soon see a nice green sheet spring from it. There is said to be a variegated form of this, but I have never been able to get it. I have recommended this one above all the others although some of them are far more beautiful ; yet its hardiness and tenacity of life makes it come under the control of every one.

Mesembryanthemum cordifolium is a tender perennial. It belongs to the Cape of Good Hope, and there are numerous varieties of it. This one, I suppose, must be a hybrid from some of them, and is valuable for its color, being a greenish yellow, very distinctive and useful as a carpet or for filling in dark figures. It can be raised from seed, but is surest to grow from cuttings. Any quantity of moisture will soon destroy and rot it off, and being succulent very great care must be taken to preserve it.

Oxalis tropaeoloides is of a dark brown color, and if also useful in filling in light colored surroundings. It is a perennial and tender, and can be raised from seed, but seems to prefer doing this for itself, for if the seeds are old they are hard to germinate. In taking it into the house it soon matures its seed-pods and explodes them all over your shelving and pots, and creates much trouble to remove ; it is sweet boxed up for the winter, and divided up in the spring,

And now, before going into the other sections in which I have classed those plants, I here show you photograph of beds composed of the plants I have enumerated on the Government grounds here. This one (See Plate I.) was produced last year, intending to show, in a feeble way, that I entered into the spirit of that year, and did something also to commemorate that jubilee year of our most gracious and beloved Queen, who has reigned so prosperously and nobly over us for fifty years. And here I must explain that the position the photographer has to take does not bring out the background as distinctly as the front, yet they were as distinct in the bed. This arises from the angle he has to look from. To do it properly he would have to look perpendicularly up on it. The angle dwarfs the crown and mars its distinctness and shortens the letters, and runs then closer together than they really were. They were as full and distinct as the front ones are in the bed. The crown is of *Alternanthera, Aurea Nana Compacta* ; the year "1887".

and "Jubilee" is *Alternanthera Parychoides Major*; "of Our," of Golden' Feather; "Queen," of *Echeveria Secunda Glanca*.

These are surrounded by a line of *Pachyphitum Bractosum*. The filling in is *Sedum Acre*. The outer border is *Salvia Officinalis*, filled in with *portulacca*; between this and the other line is studded through with the tall growing *Echeveria Mataelica* and several sorts of the dwarfer growing agaves and yuceas. The outer verge is grass, for being a point where two walks diverge, it has formed somewhat an irregular bed which is not easily filled.

And here is another (See Plate II. fig. a) that appeared the first year that our present and much esteemed Governor, Lord Lansdowne, arrived in Canada, and who has always taken a lively interest in horticulture. The words "Virtute non verbis" being his motto the beehive and bees part of his crest. That summer was cold and did not bring out the tropical plants as bold as they might have been had it been warmer. The motto is of *Alternanthera Amonea*, the one I used before I got the newer one, viz., *Parychoides*; the body of the bees are of a darker colored one; the wings *Leucophyton Brownii*; the two yellow figures are surrounded by *Golden Thyme*, filled in the centre with *Oxalsi Tripeolooides*, the side figures are surrounded by *Alternanthera*, filled in with *Echeveria Secunda Glauca*. The outer border is *Salvia Officinalis*, the remaining portion of the bed is carpeted with *Sedum Acre*.

And although those two are sufficient to show you this sort of work, yet for fear you might think me remiss and forgetful, I will show you another (See Plate II. fig. b) which was the best I could do for Lady Lansdowne. Her family name is Abercorn, and the crest is too intricate to be brought out in a bed, so I put the nearest substitute I could think of; and a portion of that crest being an oak tree I used only the acorn. This bed is composed also of plants which I have enumerated above.

And now I will take up what I call the medium class of bedding plants, which I have said can be worked in conjunction with others, but better separately, for such devices as I have shown. They will not bear trimming by the shears, as the former do to keep them close and neat. The knife is the instrument you must use on them on account of their larger leaves and coarser stems, which gives them a bad appearance unless they are kept uniform and in shape.

First, then, I will take the *Coleus* or *Foliage* plant, as it is called. Natives of Africa and Asia, they well deserve the name of foliage plant, for there is no other plant that I know that shows such a diversity of colors in leaves and shapes as they do; yet as a bedder their value is much enhanced by not standing the sun. The hothouse is the place to develop them in perfection and bring out their gorgeous colors. In a shady position there are a good many that do fairly well, but in the bright sun there are only a few such, as *Vershaffelti*, a dark color; *Firebrand*, of a flame color, and *Golden Bedder*. However, there are others that will do tolerably well and make a fair appearance in a warm, shady, sheltered bed, where the wind does not toss them about, they will give considerable satisfaction and pleasure. It is a pity those plants are not more useful for bedding, as nothing is so easily multiplied by cuttings as they are.

Achryanthus differs from the *Coleus* in that they require an open sunny position to bring out their colors, and will do well in any place where they have this. It is hard to say what varieties amongst several is the best. The dark colors answer certain purposes, but the ones I favor most are *Leudenii* and *Emersonii*. The first has smaller leaves than the other, is a more upright grower, and of a darker shade of color, being of reddish brown; *Emersonii* is of a much lower, rather straggly growth, with quite large leaves, and when young is a very bright red, very impressive and pretty. There are lighter varieties of this plant, but I never could use them with any satisfaction. They are easy of propagation; a few stocky plants, or a box of cuttings taken in the fall, before frost comes, will give you any quantity in spring. They require also trimming with the knife, and are a most useful plant in many positions.

I will now turn to some of the most useful of the light colored plants, which are fit associates for the former. *Centaureas*, a very extensive genus; some of them tall growing; but I shall only select two of them that are the most useful in beds, viz., *Gymnocarpa* and *Candidissima*. Their leaves are covered over with a white, downy

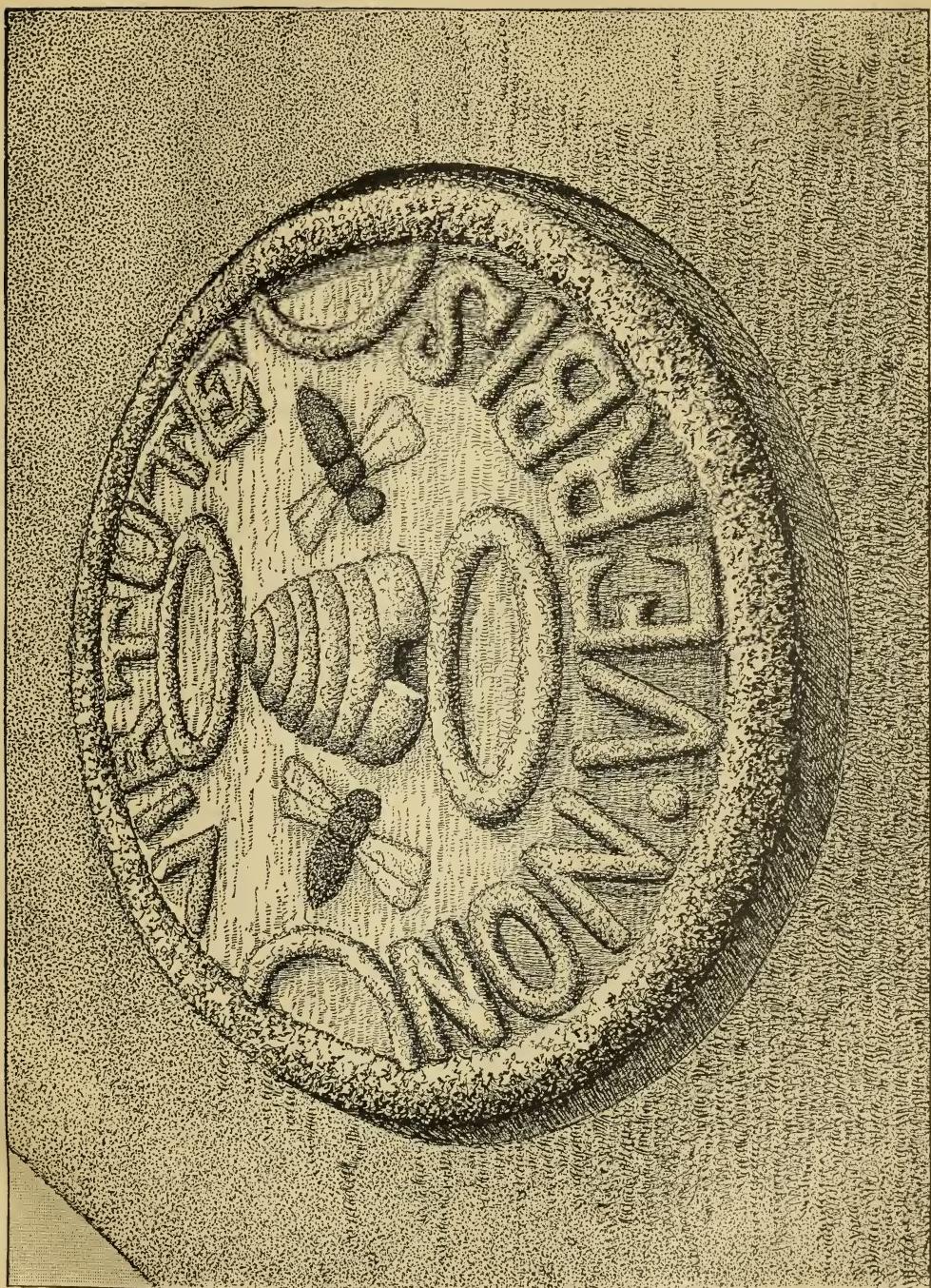


PLATE II. Fig. (a). See page 52.

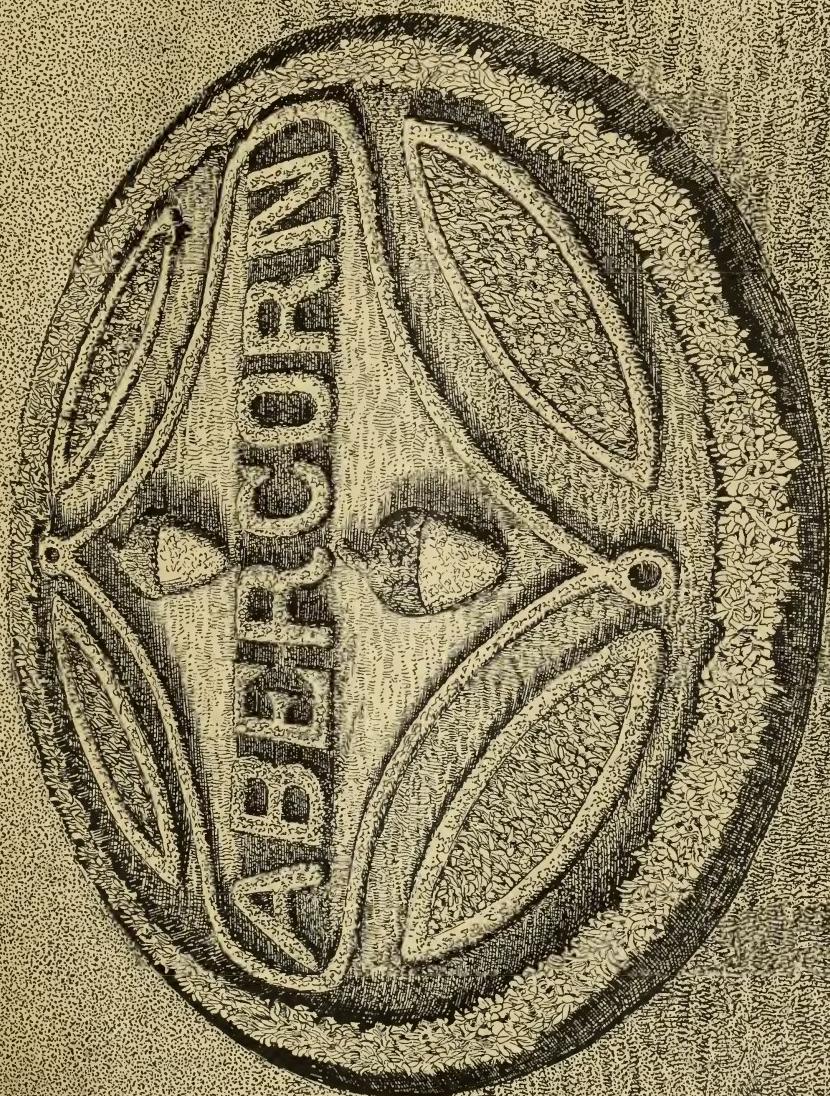


PLATE II. Fig. 6. See page 52.

substance, which gives them a most interesting appearance. *Gymnocarpa* is a close, bushy grower, different from the other, which is more upright and not so compact, and therefore not so effective as the other. They are perennials and not hardy. I never think of saving over the plants, as they are easily raised from seed, and thus make much the nicest plants. They are natives of the Levant.

Cineraria maritima much resembles the *Centaureas* with its downy leaves. It is perennial, but so easily raised from seed that no one would think of growing it from cuttings.

Lantolinias are tender perennials from the south of Europe, which grow into large bushes if allowed to do so, but are most accommodating. They can be clipped and kept to any height or form that you please. Plants may be allowed to grow quite tall, and trimmed almost into any shape you wish, and make an unusual ornament amongst other plants. Its propagation is by cuttings taken off in the fall, or from stock plants in the spring, but require to be taken early to get nice strong plants; its color may be called a light green.

I will now add to this section a new white-leaved geranium, *Mdme. Sollerii*, which promises to throw all the other white-leaved varieties into the shade when used for foliage only. I never have seen it flower, although I have used hundreds of plants of it and given it every chance to do so. The leaves are not as large, nor probably show so much white around their margin as some of the others do, but a large number of leaves are altogether white, which adds much to its appearance. It differs in manner of growth from any other geranium I have ever seen. Instead of throwing up one stem, I have counted as many as fourteen from one plant arising from the ground; that is to say, if you strike a single stem it will at once throw out stems all around it, and form a compact round bush. Many of those stems are rooted so that you can pull a plant to pieces and have many plants. It is a vigorous grower and accommodates itself to almost any condition, giving it additional favorable points over the other white-leaved sorts.

Bronze geraniums look particularly well in a bed when you take those that stand the sun best, such as Marshal McMahon, King of the Bronzes, and many others, but come out best in partial shade. This new one, *Mdme. Sollerii*, makes a splendid associate with them in the same bed, and can be used in many forms. Of their propagation little need be said. I never save the old plants, but take off quantities of cuttings and box them up in sand. There they stand and are well rooted by February, then pot them off into small pots, where they remain until wanted. A box three feet long and one wide will hold a hundred and fifty cuttings. This is the size I make all boxes for cuttings, but the more important part is the depth. There should be no more than three inches of sand in them, so as to secure them from damping off; and as many of the cuttings are young and tender this is a good safeguard.

And now I will take the tall growing plants. They are of all the worst to define, there is such a varied class of them that can be used in a bed. The great difficulty with them is their proper position. This is a part that requires considerable practice. I shall not attempt to deal with more than one bed, and one that is often seen. We shall suppose it a round bed the simplest and easiest to fill and such as anyone can reach. Center your bed with one or more plants of *Ricinus* or castor oil bean according to the size of your bed. Then outside of this put a line or two of *Cannas*. Avoid any intricate design with this sort of plants as you cannot cut and trim them in, all you can do is stake them into line. Then put a band of *Caladium Esculentum*. These two plants are most convenient as their roots are best stored away in a cellar until spring. The first is an annual and such as any one can raise in a window if they have not better facilities. You can now fill out the remainder of your bed by any of the medium growing plants I have enumerated, only observing the contrast of colors.

In *Cannas*, there is one which I would recommend any one to get, viz: Chernanii. The flowers on this one are very large and fine. Although the *Gladioli* cannot be classed as bedding plants, yet I cannot refrain from calling your attention to a new strain of them, Lemoines' hybrid spotted; they are quite distinct from the others with a rich vivid orchid like coloring. The blotch is the striking feature of the flower. There-

is a great variety of them and they are said to be much hardier than the others, any one getting these cannot fail to be delighted with them. This brilliant and remarkable class of Gladioli originated with Mr. Lemoine, in France.

Now I shall take flowering plants. Some of them can be used in many ways and carry out beautiful designs; but no plant should be used in a bed that does not flower a long time. Our seasons are too short to admit of refilling as those in more favoured climates do. Once filled they should stand the season through; plants whose flowers are of short duration should have their position in borders where their place is not so conspicuously seen when they fail.

Of flowering plants our annual *Phlox Dromondi* may be said to take the lead. I know of no plant that can exceed this, both in mass of bloom and duration. The more compact and newer sorts such as Snowball, Fireball and Rosea, are so tractable that you can make various designs out of them and they are so varied in colors that they make a splendid mass bed. People should always buy them in separate colors, in order that you may place them in many different positions that will be attractive. Much can be done to keep them in any shape you desire by short stakes run around the outside of them and a string run along them to keep them in shape, as trimming cannot be resorted to with flowered plants.

Ageratum, such as Copes' Gem and White Cap makes a splendid associate with *Phlox Dromondi*, but requires to be kept on the outer side as it is dwarfer. You can have the red, white and blue, in all its glory, or other devices. And here I show you the preparation I make for such beds which I shall allude to afterwards. *Ageratum*s can be raised from seed but the surest way is to keep a few stock plants and if those plants are cut close back in the spring and put in a hotbed they will give you hundreds of plants, as they strike almost in a few days. provided the young tender shoots are taken. Although small when put out they soon grow. Seed beds are very apt to vary in height, in fact you are not sure of their height in this way.

The *Single Scarlet Geraniums* I suppose may be called the next to *Phloxes* for a bright dazzling show; what variety of them is best for bedding purposes it would be hard to decide. I have a seedling which, by permission, I call Lord Lansdowne, that I prefer to any I have tried. Persons looking at a bed of it when in full bloom, with the sun shining on it, had to turn their eyes from it, so bright was the glare. General Grant is in great favor with many and some like the old Black Dwarf. To these can be added pinks and other colors, for the sake of variety, but properly speaking geraniums are more for massing than for any other purpose. They are always the better of some border around them. Tagetes pimula, yellow, is neat and its fine cut foliage completely studded over with its yellow flowers make a fine contrast, or even a line of *Achryanthus Lendenii*, although of a reddish color, looks well. *Asters* from their many distinct colors can be placed in a bed if the colors are kept separate so as to work out some simple design, but they require to be planted closely for this purpose, so as to cover the ground completely. There have been several new varieties of them, introduced within this last few years, and amongst them is the Zirinzbell, pure white to say the least of it it far exceeds the other older asters in its purity of white and compactness of its flowers. There are several other sorts of this strain which come well up to them. Massing plants are perhaps the best for general purposes and I will take a few of the more prominent of them, such as *Zinnias*. The great improvement that has been made in them is seen in the newer strain of Henderson's Zebrina, the flowers of which are produced in great profusion, and so varied and beautifully marked that any description that I can give could not properly describe them.

Double Geraniums I cannot omit; they always make a nice mixed bed if the plants are from young stock, raised in the spring and strong enough when put out. They will not give a distant show, but are always pleasant to look at. There are so many new varieties of them now a days that it would be hard to choose from them and I shall not attempt to name any of them.

Coxcombs are not classed in general as bedding plants, but I was so much struck by seeing them put by chance in a bed, that I thought I would try them, so I made a carpet of *Centaurra Gymnocaepa* and planted scarlet Glasgow prize Coxcombs amongst them;

their scarlet combs peering through the white foliage gave me a bed that every one that saw seemed to admire. They require a rich soil to bring them out in their beauty. The light colors also make a very pretty bed, but they require a dark ground work to bring them out. *Celosia plumosa nana* is a new introduction of this class which I tried last year with much satisfaction. I cannot do better than give you the description given in the catalogue in which I saw it mentioned. It grows to a height of from twelve to fifteen inches and about as wide in diameter. Each plant bearing from forty to sixty large golden plums of a golden yellow color, and each spike is composed of from ten to twenty smaller ones so that when the plant is in full bloom it is one mass of golden yellow. This is no exaggeration and it lasts a long time in bloom. It is bound to take a prominent place amongst bedding plants in many forms.

Petunias are an old time tried bedder, and for a mass I know of no other plant that will give a better show than they will. They are thrown somewhat in the background because they are seen so often, but they still add variety and if bordered around with some stiff growing plant they make a good bed. The newer fringed varieties of the single are very pretty, and the double fringed are extremely fine, but no use in a bed.

Verbenas were always considered a good bedder and the new large flowering varieties are certainly far ahead of the old ones; their flowers and trusses being much larger and their colors very fine. They should never be planted on dry hot soil, as in such a position they will soon rust and become unsightly.

Pansies have always been favourites, but are rather classed as spring and fall flowering plants; they never do much during warm weather; they must be planted in a cool and shady place. The newer varieties such as White's American strain, Henderson's Butterfly, and Trimandreas are great acquisitions.

Impatiens Sultani is a perennial balsam. It is a plant that may be said is never out of bloom. Plants of it will in the greenhouse flower all winter through, and outside it will flower all summer. Its color is a rosy pink with which it covers itself. It seems to be rather a troublesome plant to keep over in winter; insects seem to have a great love for it, especially the green fly and the mealy bug. It needs constant watching and little water, and as much light as possible. Of its future I cannot say; it has now been a few years introduced, yet it is not at all common. It can be raised from seed, yet even this seems difficult.

Tuberous Rooted Begonias are plants that always make a nice bed, and come within the reach of any one. Small bulbs cost little or they can be raised from seed. What makes them a convenient plant is they dry up in winter and can be stored away in any dry warm position, started in spring, and put out, when the weather becomes warm, about the beginning of June and they go on growing at once.

Lobelias, I should have classed amongst the dwarf growing bedding plants, but owing to their aversion to strong sun, their constitution not bearing it, I have kept them apart. There are annual and perennial varieties of them; the latter I prefer, they may be raised from seed and in a shady rich bed the two colors, white and blue, make a most pleasing bed. You can make simple designs or bands of these two colors which will flower most of the summer.

Portulacca is another annual that I need say little about. Any one can have a bed of it, but owing to the seed being so fine, great care requires to be taken in sowing and when coming up the plants are liable to damp off, unless light and air is plentifully supplied. And there is still another bed which I would call a natural curiosity bed, the *Cacti*. Every one, almost, will tell you he cannot see any beauty in them. All I can say on this point is that I have for years past had them in different forms, beds and borders; and in whatever position they were placed in, more people lingered for a longer time around them and examined them, than around any other plants, showing that they created much interest. All the attention they require is a dry warm sunny position; in any moist shady one they will soon rot off.

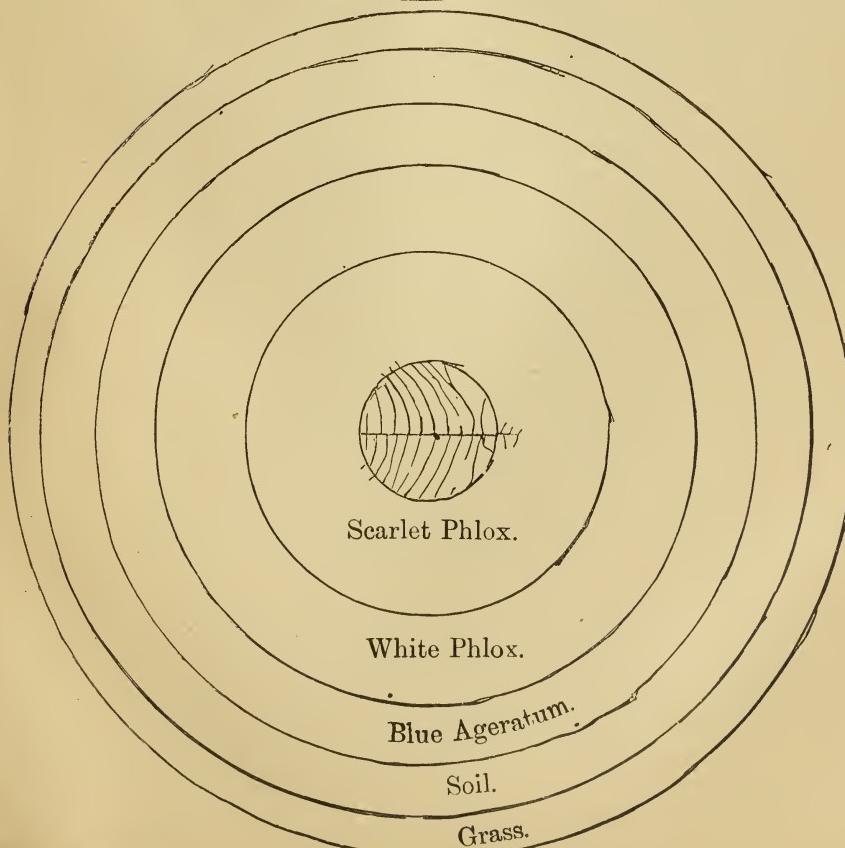
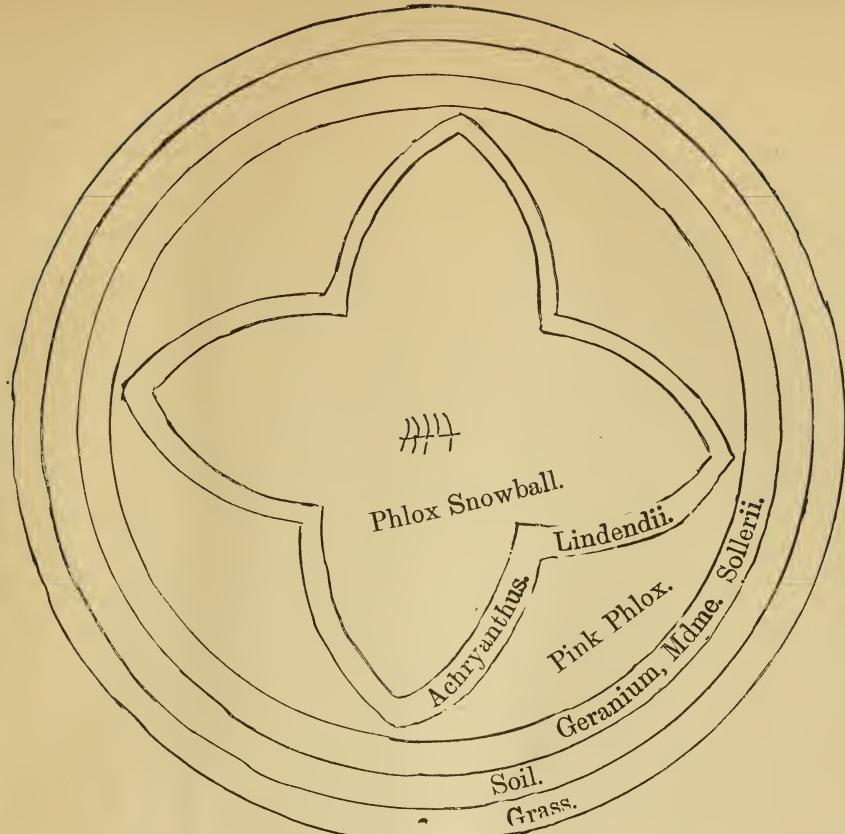
There are other styles of bedding such as ribbon and pin cushion, the first is for colour as a ribbon, the second is an under carpet of some material, with ornamental plants studded all through it; such as Agaves, Aloes, Yuccas, Palms. Any plant that has an

odd or ornamental foliage can be used in this. I might go on and enumerate many more plants that can be used as bedding plants, but I have now given you the best adapted to this climate and will leave you with this advise; always keep a reserve stock of the different sorts as accidents will happen sometimes. Grubs too cut them off, and we might forgive them more readily if the appearance was that they did so for food, but their work seems wanton destruction, cutting them and leaving them there. I am more troubled by a two-legged sort that carries away whole plants and they are an all-season pest, taking them away when the season is far advanced, at a time when it is impossible to make up with some plants. When you put out a design with flowering plants you are not always sure of the color; by means of this reserve you can take out what does not come true to the color you want and replace them from it. Consider the nature and habit of your plant before you put it out; if they are sun loving plants, give them a sunny position, if shade, give them shade, and if large leafed plants, never put them in an exposed position where the wind will toss and destroy their appearance; and above all things never commence to fill beds without some forethought. Here is a sample of my manner of preparation. (See Plate III.) During the winter I have the size of each bed, and work to a scale so as to know the space required for each. This gives an idea of quantities that may be required, also, there is a question so frequently asked of me that I will answer here, viz:—"How do you manage to fill and trim your beds so as that we never see any marks of blemish?" I use a plank thrown across the beds, raised on blocks at each end for the men to tread on for both purposes. When my bed is smoothly raked I draw my design same way as on paper, the planter following the lines without in any way obliterating them. For this purpose I use a wooden compass about four feet long, pointed so as it will mark. It is simply two pieces of straight wood attached at the top with a bolt that you can tighten at pleasure. A foot rule is my scale. The compass is also a most useful instrument in borders around curves or any place where lines are wanted. You can draw lines around any figure by following your outer edge with one point and marking with the other. This may seem to many a very troublesome way of doing this. But as yet I never have arrived at anything without trouble, and if you want to be successful in this work you must do it with some system also.

Designers have been employed to give patterns for carpet beds; this is a mistake, for they lack a knowledge of the material you have to deal with, both in nature and color, and will give you designs that you cannot properly fill. In making a design the first and most important point is to know what you are going to fill the design with. Nature has given you a very limited amount of material and color to do this work with and you cannot but abide by it. Rules are laid down for the proper blending of color; here we can only contrast lighter and darker shades and do the best with what we have.

And before closing my remarks I must say that I am sorry that many parks still cling far too much to foliage plants. They are very pretty and more enduring than flowering plants; but I shall hope to soon see the day when many of our old familiar flowering plants shall again be seen side by side with them.

Let us encourage in every way we can any one that has a patch of ground to have a bed of flowers. It gives cheerfulness to the location and is a healthful and pleasant pastime to those who attend them. If you have a friend sick pull some of them and take to him. The heart will be very hard that is not melted by them. I cannot help here adding a short extract from some paper which says: "Show me a person that loves flowers and I will show you one that has a warm heart gushing forth joy and pleasure to all around. It may be hid; but it is like the flinty rock which when broken open, has gems within that sparkles and dazzles the eye. Do not pass through this world as if it were made for you and you only. Do all in your power by decorating your homes to not only give pleasure to yourselves but also to making those that surround you happy."



WOMEN IN HORTICULTURE.

The following paper, by Mrs. Annie L. Jack, was next read to the Association :

In ruder times it was the custom for women to do the heavy agricultural work on the farm, while her lord and master was off in the woods for game to furnish the meat and clothing they required. In later years during the early settlement of America we read of women still helping in the fields, generally a labor of love to lighten the burden of the men who were dear to them; but as refinement and indoor life gave our sex more home duties, the idea took hold of many minds that it was a sign of coarseness and vulgarity to be seen at outdoor labor, and many country people foster this sentiment in their children. Phylis will go cheerfully down into the home cellar and cut potatoes all day for planting, but affects ignorance of methods of planting and cultivation of the vegetable as soon as it goes out of doors, and I remember once a country bred girl, who after a year or two at a city school where she studied botany, asked me "if those green things were strawberries?" while close enough to see, that they were well grown specimens of solanum tuberosum.

If the work of women in the growing of plants, fruits and flowers could be elevated to a science instead of being considered degrading these crude ideas would die out, and women could take their place in this as well as any other department of the world's great work. It is true some would-be delicate people may denounce you as strong and the sun browned face and hands may not be so attractive to society people, but after all these are minor things and we can learn to pity those who never know "the glad creative skill, the joys of they who toil with God." Among all the professions now open to women, that of horticulture presents many attractions that no other life can give. Surrounded by the best gifts of nature she can appreciate and enjoy this work, and it is a pity that among so many institutions of learning none has yet been endowed to teach our daughters all the important departments of horticulture. The cultivation of fruits and flowers form a large part of the refinements of life, and the work of grafting, budding, pruning, tying up grapes, and harvesting the fruits of vine and orchard can be done by our sex in competition with the stronger man, who usurp these tasks. Our florist usually employ girls to make up designs and bouquets, their deft fingers, and good taste, having a natural tendency to happy combinations, and in the pretty garden plots of most of our homes, it is the woman's hand that makes such gardens of beauty. A prominent lady florist in Cleveland, Ohio, began by propagating plants in her home and selling them to her friends, with this money she bought the cast-off sashes of an old greenhouse and some of the lumber and bricks, and by the help of a carpenter and her brother built a small greenhouse 11x18, doing the glazing herself. She was \$100 in debt when it was finished, but paid it all the first spring by the sale of plants, and going on with patient perseverance and skillful labor she is now recognized as one of the leading florists of that city.

Many women have earned pocket money, and some a competence by growing strawberries and other small fruits, such labor being light enough for woman's strength. The growing of herbs too is sometimes carried on by women, and when done with system is quite profitable and pleasant employment. Vegetables as a rule are heavier and not so easy to market, but I remember still the pleasure I experienced one winter in \$150 pocket money that was mine, from sales of celery. There had been a wash-out in the low lying lands about the city, that doubled the usual prices, and although mine was not very large, being a second crop on the ground, it was of the best quality and met ready market.

Many successful fruit growers can tell their experience, but success does not come always without failures, any more than with men, though close application to business will bring equal profit to either. Health and independence is to be found amid such work, and for country girls, there is certainly an opening that should be more alluring than the factory and workshop, and it is a pity that some practical method cannot be devised of teaching this branch of the business to promising students. The natural sciences, especially botany and entomology are necessary, the latter being indispensable in order to know our

insect enemies and how to destroy them, for it needs constant and watchful care, as well as the practical labor to keep depredators from our plants, and I would here suggest that the study of insects be on the list of books in our public schools. Professor Saunders has contributed a valuable work on the "Insects injurious to our fruits," that ought to be in the hands of every girl and boy student, for it teaches us how to fight with our foes and to distinguish our friends in the insect world, and this would be one step toward a knowledge of horticulture. The school-house should be surrounded by plots of flowers that could teach their lessons daily, and the influence would spread and grow among the girls and boys, to beautify and refine their lives till their aim would be to cause the "desert to rejoice and blossom as the rose."

The SECRETARY.—There is a great deal of sense in Miss Jack's paper, and her remarks about decorating schoolhouse yards. I think we, as a society, ought to take an interest in the children of our country, and in disseminating among them a taste for landscape gardening. We ought to encourage those who have charge of school yards to decorate them, and to plant in them such varieties of shrubs and plants as would educate the children growing up in the best varieties of plants and trees to plant afterwards in their home grounds.

Mr. WRIGHT.—I have had some little experience in that direction, having at one time belonged to the industrious army of teachers. I was very successful in teaching. I educated my own wife in the way she should go, and when I got her in that way I married her. That is one of the plants I brought up to perfection. However, at the ful how easily you can get the children interested in caring for plants. I had not to buy any plants; all that was necessary was to suggest to the children that we would have some nice plants in our window if they would only bring them. When I wanted them taken out of doors, I used to let them take turns in attending to them, and they soon got to look upon these plants as their own, and we had a very fine collection. During the summer vacation I gave each one a plant to take home and take care of, and they brought them back when we re-opened. I remember on one occasion, one of the boys accidentally knocked one of them down and broke it, and you never saw anyone so sorry as he was in your life. I didn't scold him, but he commenced to cry right off, and the next day he brought another plant, a finer one, too. This has a wonderfully good influence on children—this fostering a love of the beautiful in them. We, in Ontario, boast of one of the finest systems of public schools in the world, and we have reason to do so, but there is a great deal that might be done in the way of beautifying our school grounds and having flowers in the school-room itself. It does look very bleak and dreary to go to a school and find nothing but the bare building and a barren school yard. We are making progress in this direction every day. In our own village the Horticultural Society gives prizes for the finest specimens of flowers produced and grown in any school in the county. A large number of schools compete for this prize, and the secretary of our Association wrote to Mr. Vick, and that gentleman furnished seed gratuitously to any school that wished to raise flowers to compete. This is a step in advance, and it is wonderful how schools take it up. Before this they had no fence, and the children were told by the teacher that they must have a fence, and the children went to their fathers and got the fence. If the teacher had gone to the trustees it is doubtful if they would have done it, but when their own children went and told how nice it was going to be, they granted it.

Prof. MACOUN.—Twenty-eight years ago I tried it in Belleville, where I happened to be teaching in one of the board schools. Before I went there, the superintendent, a reverend gentlemann of the Presbyterian body, was nearly afraid to go there on account of the boys pelting him. At that time I was rather younger than I am now, and enthusiastic about the cultivation of flowers. The yard had been run upon by the children for ten or twelve years, and was perfectly hard. In this yard I made three round beds, and I said: "In this bed I am going to have flowers, and I know these flowers will not be touched by the

children." My father had a hot-bed, and I got the flowers from him and I put the plants in the yard, and we had them there by the thousand, and no one ever pulled them, and no one ever got a chance to steal them, for the children. Ten or twelve years after that I opened what is now the Central School in Belleville, and I said: "Now, we are going to have flowers here, not in the yard, but in the house." By this time flower cultivation had taken hold of the people of Belleville—for Mr. Dempsey can tell you that twenty-eight years ago very few flowers were cultivated in any part of the county—and things were changed. Well, I told my assistants that we were going to decorate that school-room; and we got hanging-baskets all around the room, and the window was filled with flower pots. What was the result? Why, the cultivation of flowers started in Belleville, and we have now in the city of Belleville the finest rows of trees of any city in the Dominion, and it was all the result of my fighting, not to the bitter but to the successful end. Now, the children never touched the flowers, and, what is more, it is the want of cultivation, or culture I may call it, that makes children care little about flowers. This is a matter which should be taken up by this Association, and impressed upon the Minister of Public Instruction in Toronto, the Hon. G. W. Ross. Show him the absolute necessity of bringing this thing before the teachers, and not recommending them, but compelling them to bring this mode of culture into the schools. This is not the first time I have talked about this matter in this city, nor do I intend it to be the last, because this matter must be talked up until not only the teachers wake up but the men who put the teachers in their places, and these men must learn that there is a culture about the cultivation of flowers, and having them constantly under the eye, that surpasses any other culture in this age of the world. I believe, gentlemen, you are the men who can force this matter before the Minister of Education and compel him to see it. Mr. Ross is not a gentleman whose eyes are shut, but like many another Minister, he will do when pushed what he was anxious to do without being pushed.

The SECRETARY.—It has been a favorite idea of mine for some time to have this thing stirred up in regard to the schools. I am connected with the High School Board in our village, and have been interested for some time. We want to bring some influence to bear on our school authorities, so that a larger tract of land might be had in connection with all our schools, and that they might all be made the means of educating the children growing up. Let the school yards be not simply play grounds, but means of instruction and education with regard to trees and shrubs as well as flowers. I think it is a mistake where all the trees and shrubs planted in a school yard are of one kind, as we very often see. They should be little arboretums; collections of the different trees and shrubs which we have in our own country desirable for planting in private grounds; and the teachers ought to take every opportunity they have of instructing the children of the school in the names of these trees and shrubs, so that they may grow up with some knowledge of this department of horticulture. How many of the people which have grown up in our country are utterly ignorant of the names of the different varieties of trees and shrubs to be found in our woods. It seems to me that this is a matter of great importance, and that we ought to take some means of influencing the Minister of Education in the manner suggested by Mr. Macoun.

Dr. HURLBURT.—I think this matter should be impressed on both the public, and the school authorities.

Mr. CASTON.—There is a day set apart for tree planting called Arbor Day. In our section, at the last school meeting, we had opened a new school building with fine grounds, but it had no trees, and some of them spoke about it. I proposed to have all the section school teachers and children turn out on Arbor Day and get a lot of evergreens and deciduous trees, and plant them. Of course this was a step in the right direction, and something more may follow.

Mr. ANDERSON.—With respect to Mr. Wright's suggestion as to the cultivation of flowers in the schools, especially in high schools, I think it is most required in the rural districts. You will find that in large cities and towns more time is devoted to gardens for fruit, vegetables and flowers than there is out in the country, where you would expect the farmers to be more alive to their own interests in the matter. In any of the provinces you will find that it is the farmers, who have most at stake, who are careless and

indifferent. It is lamentable that such should be the case. We want to teach our farmers that their land is worth more to them than they are making out of it, and anything that will teach the farmers what a treasure they have in the little patch behind the back yard, would be an immense benefit to the country. I think if something could be done to stir up the farmers and show them the actual money value of flower and fruit gardens and vegetable gardens, and the cultivation of forest trees, it would be materially advancing the interests of this country.

Mr. GIBB.—When I was travelling in Germany, I noticed one day, at one of the horticultural schools, that there were about four times as many students as the school could hold, and I was told that it was a convention held there every three years, and that every school teacher had to go and spend three days at that horticultural college attending lectures on horticulture, and more than that, that he had to plant so many trees every year; whether that is in his own or the school grounds I cannot tell. It amounts to this, that every teacher there of a certain grade had to have a fair knowledge of agriculture. Then, one of the chief methods of teaching horticulture in Europe is to be found in the railway station gardens. Wherever throughout Europe there is a little railway station, you will find a nice little garden. In an out-of-the-way place in Russia you will find a beautiful shrubbery around their little station. One thing that has worked very well here as an incentive to children to study up trees, is prizes for collections of leaves. We have found that work admirably. No one can collect specimens without studying up the trees, and we have had capital collections from the youngsters, some of whom know all the native trees and some of the foreign ones too.

Mr. DEMPSEY.—I believe I am a farmer. I am sorry I am not a school-teacher, but unfortunately I never was, and we farmers have not had the privileges of those beautiful school-houses. Now, I have to say that, in our part of the country at least, every farmer grows vegetables—every one of them. My friend Professor Macoun can tell you they grow vegetables, and good ones too. I can assure you that farming is not at all a disgraceful profession with us, and if the gentleman who thinks we don't grow vegetables will come up there, we will show him some as good specimens as he ever saw in his life.

SECOND DAY.

On reassembling on Thursday morning the proceedings were resumed by opening the Question Drawer, in which were found the questions on which the following discussions are based :

FERTILIZERS FOR APPLE TREES.

QUESTION.—Is there any fertilizer better for the apple tree than ordinary barnyard manure?

Mr. BRODIE.—Last spring I applied to one half of my orchard hardwood ashes, about half a bushel to each tree, and to the remainder of the orchard I applied the ordinary barnyard manure the fall previous. On the part of the orchard to which I had applied the barnyard manure the apples were wormy—about one-third of them were wormy—which looks as if the manure had been a harbor for the insects; while the apples on that part where the ashes were applied were well colored, and not a spot at all on them.

Professor SAUNDERS.—What quantity of ashes?

Mr. BRODIE.—Just according to the size of the trees. I had a man going around with one of these coal sifters, and we sifted them around just as far as the branches extended.

Mr. DEMPSEY.—Mr. Brodie's sentiments just about speak the whole of it. I never found any better fertilizer for apple trees than hardwood ashes yet, but still occasionally a little manure or green clover turned in we find very advantageous. The way we have

been using clover is by sowing a crop in corn. We plant corn in the orchard, and after hoeing it the last time we sow clover thickly, and in our part of the country, something like here in Ottawa, the snow lies on the ground pretty well, and the clover about June will be in blossom. When it comes in blossom we commence to turn it under with a chain on the plow, and in every third furrow we drop a row of potatoes. That is the way we get our strong growths of potatoes. There is no trouble, and we never fail to have crops on that principle. We use fertilizers for the corn first, then we use the clover for the potato, and I find that we get beautiful apples where we do this—fine crops on the trees and the trees themselves healthy.

Mr. HAMILTON.—An exception should be made of young trees, which are better manured with stable manure. It certainly grows better, but after they have reached a certain growth and begin to bear the stable manure might be dropped or used in a less quantity and more ashes. I think young trees are improved by the application of well rotted stable manure, while bearing trees would be the better of ashes.

Mr. BRODIE.—My experience of manuring in garden soil is that where we manure at the rate of fifty or sixty tons to the acre, we make too much growth in wood. It is only trees like the Duchess that we can afford to manure. My Fameuse made such a growth of wood that I had no crop at all; I took off two crops of hay, and then they began bearing.

A MEMBER.—How often do you apply the ashes? Is it every year, or only now and again? I know that in grape growing I have killed some of my plants by applying them too often.

Mr. BRODIE.—Only apply once a year, and it is according to the size of the tree; if the tree is large, half a bushel; if small, less. Every year as soon as the snow is off the ground.

The PRESIDENT.—No doubt it would depend a good deal upon the soil itself, a light sandy loam would take a good deal more ashes than a sandy soil.

Mr. DEMPSEY.—I will just give you a little result of some of my own experience with manure applied to an apple orchard. In the first place, there is a very great difference in the value of stable manure dependent upon the food of the animal. If an animal is highly fed one load of manure is worth perhaps ten or fifteen where they are only just kept on straw, hence there is very little danger in using stable manure if your animals are kept all on straw, but if the animals which produce the manure are highly fed the trees are sometimes forced to such a rapid growth that I have known a whole block of new apple trees to be destroyed in one season just from the forcing of the growth from stable manure. In applying ashes whether it is a large or a small tree does not make any difference in the quantity; because you spread it evenly over the whole of the soil. Under all circumstances I find that cultivation is worth more than all the fertilizers we can use. I have land on which I used no fertilizers whatever for ten years, but cultivated the soil well, and we invariably got a good growth of trees without any fertilizer. Then, again, I have tried to grow apples without cultivating the soil; we had a block of trees of a few acres which we did not cultivate this past year, neither did we take anything from the soil, but we did apply some ashes. The season was exceedingly dry. Just beside us was the piece of land we took the heavy crop off, and on the spot that we cultivated and took the potatoes off or other vegetables we took off one acre as many apples of the first quality as from ten of the others.

Mr. MITCHELL.—I am not an apple grower, but I would like to say a word on this question. As to wood ashes, I am not enough of a chemist to know what it really does as a fertilizer, but I have used ashes from our mill to a considerable extent on plants of different kinds, and I cannot say that I feel to-day that it does a great deal as a real fertilizer, but I think that it keeps down many of the aphides, of which there are more working at the roots of our plants than perhaps we have any idea of. Take up a plant of almost any kind carefully, and particularly in dry seasons, you will often find the aphides working there. I think these aphides which infest the roots would rather be somewhere else than where there are ashes in the soil. My experience is that we do more good with ashes in that way than anything else. These aphides are getting to be a very serious pest, and I think the application of ashes has the effect of preventing their ravages to a

very great extent, but, as I said before, I can hardly say I believe ashes as a real fertilizer amount to very much.

Mr. SHEPHERD (Montreal Horticultural Society).—I have used large quantities of ashes, one hundred or a hundred and fifty barrels a year; mixed wood and soft wood ashes. I have killed a great many trees by applying too great a quantity of ashes. I do not approve of Mr. Hamilton's idea of forcing young trees, particularly the Fameuse, to make a great growth, not in the Province of Quebec at least, where the climate is not such as to permit of a great growth safely, because it does not ripen the wood sufficiently. Out of three hundred trees set out in 1879 I lost about 25 per cent, and I attribute that loss to the fact that they were forced too much the first four or five years, that they didn't mature their wood. I keep most of my orchard in sod and grass, and we apply the ashes between the rows of trees; the man goes down with a cart full of ashes and sprinkles them as the horse walks along. We don't spread the ashes under the trees, but between the rows. I think one certain benefit of their application is that the color of the fruit is very much improved, particularly on sandy or gravelly soil. I have noticed the year after the application of the ashes that the color of the fruit has been very much improved by it.

Prof. SAUNDERS.—I think Mr. Mitchell has struck only half the truth in his remarks though there is a great deal in what he says. Alkaline applications are no doubt efficacious where there are soft bodied insects like the aphis, which are readily destroyed by them, but to ignore the usefulness of wood ashes as a manure is going contrary to the experience of the whole world. We know that potash is a most import element in the constitution of all plants and trees, and cannot be replaced by anything else, and where that element in the soil has become exhausted you have deficient fertility, and the fruit, flowers, or whatever you may grow, will be of an inferior quality, and it becomes a necessity in some way or other to restore this important element to the soil as a fertilizer. The knowledge which we at present have of the chemical constituents of our fruit trees is so limited that it is not possible to speak positively as to what preparation of this important substance should be added to the soil, and the character of the soil itself also modifies the importance of the use of a substance of that sort. With regard to the apple itself, we have had analyses made of the apple several times, but I am not aware that any analysis of the wood or leaf has ever been made in such a way as to give us the manurial constituents which enter into the tree. That is a class of work we hope to take up at the Experimental Farm as soon as we can, not only analyzing the fruit of the tree, but the wood and leaves and roots of the tree, so as to ascertain what are the constituents drawn from the soil. When that is done we shall probably be able to give some useful suggestions as to what should be added to the soil where it has been cropped annually for a long period with the same product, as in the case of the apple. I think the present discussion a most import one, but I would not like it to go abroad that ashes are not a good fertilizer, because I am sure it would not be a correct conclusion.

Mr. BRODIE.—Is not there a certain percentage of phosphoric acid in ashes?

Prof. SAUNDERS.—Yes, and some iron, and very fine proportions of other salts and lime. It depends very much upon the character of the wood. Different trees yield ashes with different constituents; some are richer in potash than others, and some richer in other ingredients.

Dr. HURLBURT.—We almost always cultivated, about three-quarters of our orchard; sometimes potatoes, sometimes corn, and there was very seldom any fertilizers used under the trees, though sometimes some barnyard manure was scattered over the ground under the trees. These trees where the ground was cultivated every year grew much more rapidly, and produced much better and more fruit, and the trees lasted longer. We never used any ashes, and I question whether ashes or any fertilizer of that kind can be permanently used to advantage. We know that a great part of the substance of the tree comes from the air. When I say a great part I mean almost the entire substance. Of course there are many elements taken through the roots, but the chief thing to be taken into account in manures is to loosen the soil and allow the roots to run freely into it. It is very possible that sometimes these manurial substances put upon the soil may quicken the growth, but I question very much whether permanently they do so. I think

an experiment of that kind which has lasted over a great many years in my recollection would be of great importance, unless some experiments show to the contrary. The underlying soil of these trees was a silurian limestone. A gentleman who spoke here yesterday in reference to the soil around the St. Lawrence, said he could grow profitably only on some gravelly ridges where he has tried upon the limestone. I don't know but what some of these limestones are very compact, and will not allow the roots to penetrate. In other places forest trees as well as apple trees will grow, where the rocks do not lie close together, and among the crevices down I have found the roots five feet below—you know the soil under these limestone rocks is a very rich, black mould—running between these rocks, and the trees would flourish almost better perhaps than on any other soil. At all events that is my experience.

HORTICULTURE IN THE PUBLIC SCHOOLS.

QUESTION.—Will the President please have a resolution passed embodying the purport of Prof. Macoun's remarks last evening, requesting the Minister of Education to take steps towards the introduction of horticulture in the public schools.

THE SECRETARY.—This is a very important subject, though we have not time to discuss it at present. I think it would be rather superfluous to have it taught in the schools as a lesson, the children having already so many lessons to occupy their attention. But if in some way it can be made a recreation in connection with the schools I believe it can very successfully be brought into the course. If every teacher had the requisite practical knowledge he could by these arbor days and during recess, perhaps, and at other times, take the children out in the school yard and give them a few little practical lessons in a way that would be a pleasure to every scholar rather than a matter of study, and thus make them practically interested in it. If every school yard in our Province could be made a little arboretum, if the play ground could be made a little larger than was necessary, and a part set aside for a collection of flowers and shrubs and trees of the country, not more than one or two of each variety, and if every first-class teacher were compelled to be sufficiently versed in these subjects to impart the requisite information, I believe a great deal might be done to disseminate information in this respect. I would express my views in this way, and put it as a motion perhaps before the Association, in order to bring it up in some definite shape. But first of all let me say we were studying how we could disseminate among the farmers a spirit which would effect an improvement in their yards. We want practical illustrations, because they will learn faster that way than in any other, and we must make the school yards the illustration as far as possible. I would move the following resolution,—“Having in view the great importance of a more extended knowledge of horticulture in our country, this Association recommends to the Minister of Education the consideration of the wisdom of encouraging the study of horticulture in connection with our public and high schools, both by making it obligatory on first-class teachers after a certain length of time to take a short course of instruction at the Agricultural College, Guelph, and by making each school yard an arboretum of native trees and shrubs properly arranged and labeled.”

MR. MITCHELL.—I have great pleasure in seconding the resolution. We have got too much in the habit of regarding our public school children as a horde of little vandals, who destroy everything they can lay their hands upon. I know in my own district in some of the schools we have little plots laid out, and they do not destroy them but take good care of them. With public school scholars or anyone else when certain results are looked for from them they are pretty sure to follow, but if they see that people place confidence in them, whether little or big, they generally try to deserve that confidence.

MR. WHYTE.—About two years ago I was requested by the Inspector here to give lessons in botany in the school, and the pupils were given a portion of the school yard which was fenced in by the board. I can say that I think it had a remarkably good effect on the pupils; instead of neglecting or destroying the plants they got, they took the most particular care of them, and they were continually doing all they could to

beautify the garden? I understood that afterwards a great many of them carried them home and cultivated plants in their own houses. I certainly think a great deal of good may be effected in the manner suggested.

The resolution was unanimously carried.

BEST VARIETY OF PLUMS FOR THE OTTAWA VALLEY.

The next subject for discussion according to the programme was entitled as above, and the discussion was opened as follows:

Mr. GREENFIELD (Ottawa).—I have tried a great many different sort of plums. Pond's Seedling bears for a year or two, and then dies out. I have Glass' Seedling, which will bear five or six years; I have got very good crops from it, but, like all the rest of the best plums, it will not stand the climate. I have tried a great many; I have got some in flower, but as soon as they come to bearing order they die out. Glass' Seedling I find is beginning too; it is a kind of disease underneath the bark, and where it has taken the disease under the bark I cut the bark all away, and when I do that I find a kind of white scum between the bark and the wood, which I cut away, and then paint it with strong turpentine and paint. I found that preserved the tree for some two or three years, but it went at last. I have a seedling coming now from which I hope to rear some good ones, but as to trying our best plums here it is almost labor in vain, for they will not stand the climate. I have tried them on all kinds of soil, and now I am cutting them down in the Russian fashion to see if I can grow them that way, and some of them are looking very well. I have had the Orleans, white and blue, one we have imported from Quebec, but they only stand a few years; they will not stand the climate any length of time. I would not advise anyone to rear any plums here, unless they are reared in the bough. I think I have about a couple now reared by our seedling from the Glass' Seedling and the Pond's Seedling. I may have some bearing in a short time, but I don't intend to raise any more.

A MEMBER.—Have you ever had the Weaver Plum?

Mr. GREENFIELD.—No, I never had it, but I got a great many from Mr. Leslie of Toronto about ten years ago; I got the best and hardest plums, that I thought would stand the climate, but they all died out.

Mr. SHEPHERD.—Have any of your seedling plums borne fruit?

Mr. GREENFIELD.—The Glass' Seedling is not bearing yet, but the leaf shows very good quality and strong wood, but I find if you get them from too strong ground they make too much wood and won't stand the climate. I find the best ground you can put them on is cold, heavy clay soil, but it does not do to put them on too strong soil, for they make too much wood.

A MEMBER.—All the red plums have shrivelled up very badly—become spotted and shrivelled up and large quantities destroyed in many instances. In my own garden we had only two or three that escaped, I would like to know if any remedy can be devised?

Prof. SAUNDERS.—Did it occur previous to last year?

The MEMBER.—It began about four or five years ago, and it seems to be getting worse.

Prof. SAUNDERS.—Did the trees lose their foliage?

The MEMBER.—No.

Prof. SAUNDERS.—I know that in the west they would shrivel sometimes in an exceptionally dry year, but I am afraid I cannot throw any light on the subject.

The MEMBER.—I thought it might be owing to the dryness of the season, but although I watered the trees copiously for some time it didn't seem to make any difference.

Mr. WHYTE.—I fully agree with Mr. Greenfield on the folly of spending money on grafted plums, for none of the ordinary plums grown in the west will succeed here. I tried it some years ago, and the growth is very rapid, but they all died out. Since then

we have got some plums of our own by selecting the best seedlings, which are very good; I have two or three trees quite as good, I think, as most of the western varieties—that is for preserving. They never shrivel or drop or give any trouble of that kind, and they are quite as large as the Black Ball. All our seedling plums are a yellowish red or dark red. I am quite sure there is no use in trying to graft plums in this part of the country.

The SECRETARY.—During last summer Mr. W. H. Wylie of Carleton Place sent up to me a small basket of seedlings, which I think are worthy of notice. He also sent me a few shoots or sprouts which I have planted, and some of them are growing, so I shall have an opportunity of testing them. It is a large, red, native seedling, which has been in his family for a long time, and they have found it far superior to any other plum in that locality.

Mr. HAMILTON.—I have tried plums, and they have failed, but I have had very good success with the De Soto. A tree planted three years ago last year produced a gallon of very large, fine plums. In regard to the subject of plum growing generally, I was down in New Brunswick a few years ago—I think it was four years ago—and I saw a very large plum orchard, and the plums were of a sort which it was generally considered impossible to grow. There was the Green Gage, the Washington and some others, and to say that I was astonished would be putting it very mildly. I was down there in winter, and saw something of the method of treating the plum tree in winter. The gentleman who grew them told me that he spread out the roots to the east and west in planting them, and put none to the north and south. Then in winter he would take a shovel of earth from the south side, and bend the tree down to the south. I saw a tree trampled down in that position. He told me that by that means he had large crops every year, and plums nearly all of the best. Now, that may not be due altogether to the winter protection; I think these plums were planted pretty closely, and I think the ground was shaded. He told me also that the soil was not disturbed—was not cultivated, and that also, I think has something to do with it. I think the bending down prevents the fruit bud from being injured in winter, and the close planting tends to preserve the trees and make them productive.

Prof. SAUNDERS.—Is that orchard protected by a hillside?

Mr. HAMILTON.—I think they were grown on a northern exposure.

Mr. BUCKE.—I have grown a good many cultivated plums, and have not so far succeeded very well except with Pond's Seedling and Glass' Seedling. But the Pond's Seedling is a very shy bearer, and the Glass' Seedling, though grown a number of years, I have had but very few plums from. The tree is hardy, but the fruit spurs are not hardy, and, like Mr. Whyte, I have had to fall back on the natives. Moore's Arctic, about which we hear so much, is no better than the rest of them here. The Weaver is very hardy here, but the plum is very inferior compared with the wild plums, raised here. The great difficulty with the wild red plum is that the stone is too large; if we could get it with a smaller stone I think we would have a satisfactory plum. The plums grown in the Ottawa Valley are very superior to those grown in Minnesota. I have seen a number of Minnesota plums, and they cannot begin to compare with those grown in the Ottawa Valley. I think if we make a collection of some of these plums we are talking about as we are going to do with the seedling apples it will be a great benefit to northern Canada, and perhaps to some of the southern parts of it, where people may perhaps be very glad to grow them. They crop very heavily, are very hardy, and the flavor of some of them is very good. The Orleans plum, brought from the Island of Orleans, is not at all hardy in the Ottawa Valley. I don't know why that is, as the Island of Orleans, as everyone knows, is below Montreal.

Dr. HULBURT.—I had a few years' experience in growing plums here, but succeeded with none but the native yellow plum. It is very different from the red plum in the west—a larger and better plum. The trees grew very rapidly, and bore profusely, so much so that the limbs were almost broken down year after year, and the plums, which were large and yellow, were very luscious. I remember a tree, the largest yellow plum tree I ever saw in my father's orchard, which I always understood was a native. The trunk of the tree grew about as high as a man's head before the limbs went out, and the

branches spread further, and it was a larger tree than most apple trees. I think a foot or two above the ground it was fourteen or fifteen inches in diameter, and the plum was very large. I got down a plum that I used to grow in Hamilton, but it died, and I then got some from the eastern townships, but they died the same. I think these native yellow plums here are well worth cultivation, I think they would give very good results, and the tree is as hardy as our forest trees here.

Mr. Whyte.—I would not like the members of the Association to think that these stones are all so big here, there are some that are small. They are a very good plum indeed, and lots have a very small stone.

Mr. GIRB (Abbotsford, P. Q.).—My first efforts proved failures; now I have plums every year. I first planted those kinds which did best in the sheltered city gardens of Montreal. Lombard bore one glorious crop and gradually died. Bradshaw, a few now and then; so did Coe's Golden Drop, Quackenbos, Damson, and others. Dictator, Nota Bene, McLaughlin, and many others proved failures. I had a few from the Washington, and then it died; in fact, I might go over a long list in the same way. Later on I tried several varieties of the Prune Plum of western Europe, but they are not hardy. I have tried the Prunus Simoni of China, it is about as hardy as the Lombard. Then I planted some Russian plums, but I cannot speak of them yet; they are making slow growth, in fact all my plum trees are making moderate growth; I have not been forcing them. In the cold belt many have their hearts set on the Russian plum. Let us see what we have. The plums that Mr. Shroeder, of Moscow, has sent to the Iowa Agricultural College, were received by him from Poltava, where the winter temperature is like that of Hamilton. Dr. Regel, of St. Petersburg, has sent out three varieties, from whence obtained he was unable to tell me. The four varieties received from Orel as Orel 19 to 22, are probably the Rothe Lange, Gelbe Lange, Blanc Lange and Tchernoslev, and whether of Russian origin or not I cannot say. Then we have (thanks also to Prof. Budd) in this country the Moldavka received from Varonesh and some from Riga. The plums of the Volga, I regret to say, are not in this country, and are very difficult to get because they are in the hands of little peasant fruit-growers. We therefore have not in this country a good selection of the plums of the cold climate of Russia.

In 1873 I planted a number of root grafts I received from Wisconsin, and where the graft failed I allowed the stock to grow. The result was that I had five crops in succession, and a crop nearly each year afterwards. Possibly if I had manured them a little they would have done even better. Some were poor in quality, and some were of good quality for eating and fairly good for cooking, but if you can them, then the astringency in the skin and stone become too strong. Last year I planted for the first time Desoto, which is a decided improvement on these wild plums I have spoken of. It is a young bearer, and the best in quality of these American plums which I have tested. Another plum that has borne with me is the Miner, of which I have about ten or twelve trees. It ripens about the 1st of October and keeps till 1st November. It is a deep dark red, and has the flavor of a musk melon. It is a light or moderate bearer each year. A plum I have not fruited is the Mooreman, but the stone is very small, and it seemed to me to be free from astringency. I have tasted Wolf and Maquoketa on the College grounds at Ames, Iowa, and I feel that the better varieties of the American plum are the most satisfactory for our colder climates. In regard to the question brought up by Mr. Hamilton, if we protect our raspberries why should not we protect our plums? In Central Russia many are planted where the winters are very severe, and they bend them down every winter to the ground. If the trees get too old to be bent down they take their chance. This plan is adopted on a large scale by Mr. F. P. Sharp, of Woodstock, N.B., with Moore's Arctic.

Mr. BRODIE (Montreal).—My experience has been very much like that of Mr. Greenfield. There was a very valuable article in one of our Reports (Reports of Montreal H. S.) by Mr. Spriggins, on growing plums from seed. He sowed the seed, choosing those varieties which had a nice broad leaf, discarding all those with a small leaf and prickly stem, and he has originated some very fine varieties. There is also a Mr. Arnett, of Hochelaga, who has a very fine seedling grown in the same manner. Another gentleman has planted some California plums, and says he has got a very fine seedling.

from them. I have the Yellow Egg grown from suckers, and as the tree gets old and dies there are others to replace them, and it is the same with the Green Gage.

Mr. CASTON (Craighurst).—Thirty miles north-west of where I live is the greatest plum region in Canada. The soil is a rich clay loam, with a large body of water, the south shore of the Georgeon Bay on the north. Last summer you could buy plums there cheaper than wood. Now, where I live, about thirty miles south-east of that, it is pretty hard to grow plums, and only a limited number of varieties succeed well. But our experience is that they succeed best on a clay soil. From the remarks I have heard in regard to the Ottawa Valley I would recommend you to do the same as I do myself; that is top graft on the native tree. If you have a vigorous native seedling let them grow in long sod and don't cultivate, and you will find the grafts put on top of them will make a vigorous growth. You can stop that growth in the month of August. Some of you try that for a few years, and you will succeed in growing most of the finer varieties—by top grafting on the native trees.

Prof. SAUNDERS.—I hope that the gentlemen who have the useful seedlings spoken of will send them to the Experimental Farm to be tested alongside each other, so that we may get such material as will be useful, not only in the Ottawa Valley, but in all parts of the country. We are very anxious to have this material got together.

The PRESIDENT.—I think this is a very important point; this question in regard to the different varieties of fruit we grow seems to be continually coming up, and we certainly must see the importance of it. That is, in such a district as this, where you want to attain the highest excellency, and where you can grow a really good variety, but not permanently, then follow it up by getting a seedling from it, and you will succeed with this seedling; and in sections where you cannot grow a tender variety by protecting them in some way so as to get the fruit of it, get it if it is at all possible by the growth in that cold section rather than by importing seed from some other section; I think that would be a point in favor of the future growth of the tree. In regard to Professor Saunders' request, I think you will give every assistance to the Experimental Farm in this respect. I hope fruit growers generally will avail themselves of the opportunities offered by the Farm, and the experience of the gentlemen who are conducting it.

HANDLING OF FRUITS BY RAILWAY AND STEAMBOAT COMPANIES.

"Handling our fruits by the Railway and Steamboat Companies, the accommodation given, the grievances of the past, the requirements of the future, our most reliable markets and the best routes by which to ship," was the next subject that engaged the attention of the meeting. The discussion was opened as follows:

The PRESIDENT.—One of the first requisites towards meeting our requirements in this respect is promptness in supplying shippers with clean, well ventilated box cars, and we want those cars in the early part of the season. I have frequently made application for cars, and, after waiting day in and day out, the fruit in the meantime lying there and suffering damage, had to be satisfied with a car which had been used for shipping cattle, or some other purpose that rendered it quite unfit for carrying fruit. Cars for shipping fruit require to be perfectly clean and devoid of any odor; because fruit very readily becomes impregnated with any odor which clings to the car in which it has been shipped. In regard to promptness, it may be difficult for the railway companies to provide the cars. That, however, is not for us to consider; we have to lay our grievances before them and let them consider that: and I have no doubt that many of them might be much more prompt than they are. I have had many instances during the past season in which severe loss was incurred, one of which I will relate. I was shipping a special lot at the small town of Kincardine—a lot I had sold by cable in London, England. I made my bargain with the local agent strictly, so I might know what I was going to make on the sale. Well, in the first place, the Grand Trunk Railway Company, the company with which I was dealing, forced me, contrary to my desire, to ship by Boston

rather than New York. The rate made by New York was much higher than that by Boston, and the result was that I had to employ Tiffany cars, as it was late in the season. But that was not the worst, although I felt bad enough at being coerced in that way, and remonstrated very strongly with Mr. Earle, the freight agent in Toronto, but before I could get the Tiffany cars I had to wait about two weeks, during which time the fruit sustained considerable damage. Then, instead of the rate agreed upon by the local agent, I was charged an additional fifteen per cent. for the Tiffany cars. I thus suffered a double loss,—in the first place by paying more freight than I expected or agreed to, and in the second by the damage the fruit sustained owing to the delay. Now, that is one instance, and we have many such wherever we go. Then, again, when we have these box cars they are not equipped in a manner fit for carrying fruit. They should be supplied with what in England are called "buffers," to prevent damage by shunting of the cars. This is a point well worthy of consideration by our railway companies, and I hope they will endeavor to do something for us in this respect, as we find by actual experience that the damage to our fruit by reason of this shunting is very great—that no matter how well or strongly we barrel our fruit up, this excessive shunting smashes them open. I may say here that the greater the bilge on the barrel the greater is the liability of its being broken open. That is a point to which we might to some extent remedy the evil by having barrels with as little bilge as possible, and driving the quarter hoops down towards each other. A barrel so treated will not only pack better in the car, but it is also easier on the fruit when it is in the vessel. But, at the same time, I would recommend that shippers of fruit should urge upon the railway companies the desirability of placing these buffers upon their cars, which I am satisfied would considerably lessen the damage from the source of which I speak. Then, the present system of sealing our cars is not at all in our interest—it is merely by a little wire which anyone may pull out with their finger and thumb, and in shipping we have had many complaints about wrong count, as it is called. Even in cases where we have so thoroughly tested the matter as to be able to swear to our count word has come back of shortage. I was conversing the other day with a gentleman who had a shortage of this kind in shipping a number of car loads of apples to the North-west. In some of the cars he had shipped I forgot how many barrels of dried apples, and when they arrived at Winnipeg the dried apples were not there at all in any of the cars. The method of sealing was so imperfect that some rascal had opened the car and extracted the fruit; and it does seem to me that the companies should adopt some means of sealing these fruit cars which would prevent their being tampered with in that way. It is quite possible these cars had been shunted off on to a siding, and at night, or some other convenient time, the apples were stolen. There is always under the present system abundant opportunity for such thefts, and the question of sealing is a very important one for the railway companies to look into, as it could easily be remedied if they did so. Then, in regard to bills of lading, the companies should in every case give their own count on the bill of lading, as is done with almost any other kind of freight. Of course under the present system if they give a bill of lading they would be liable to the shipper for damage in the lost article, but I see no reason why they should not give their own guarantee count upon the bill of lading. Another great convenience to shippers would be the issue of bills of lading not only to ports in the kingdom, but to inland points. It is a great nuisance to the shipper who wants to ship to some inland point not to be able to get a bill of lading through to that point, but only to the port; as then he runs all the risk of transhipment, and has to employ an agent to take it inland. The result is expense upon the shipper, whereas otherwise he would get the competition of that inland market as against the port market, which would be to the advantage not only of the shipper but of this country. Then, as to the method of handling, we have made test cases. In only one case did I notify. At the request of one of the Grand Trunk Railway officials I notified Mr. Earle of one shipment, for the purpose of seeing how well they would handle that shipment, and he said he would be glad to do anything he could to assist the thing forward by the steamship company. I asked him by letter to see as to the transhipment of this particular lot at Boston; to tell whatever steamship company it was going by that this was a test lot, and

to ask them to use very particular care in the storing away of the goods, and also as to the transhipment upon the docks at London. The result of that was that the handling at Boston was if possible worse than ever before. The handling between the railway and the steamship was something terrible, they were smashed open and tumbled into the vessel in any shape, as long as there was a head in and a hoop on and they would hold together anyway. A point for the railway companies to consider is the reliability of their officials there. We want some different class of men to handle our fruit from those generally known as baggage smashers, or there will be no success at all. Now, I would like to ask the railway companies why this through rate—I can imagine the reason, but I would like to put the question—from the western sections of Ontario to ports in Britain *via* Montreal and Boston should be less than the through rate at New York. The through route by New York is the best route, and here I must make a statement, and it is a pretty strong one, which is this. I have shipped through by New York, and the handling when they are sent by that route is very much better than when they are sent *via* Montreal or Boston, in fact the difference in the handling would make the difference between profit and loss in the old country. On one or two of the lines of steamships there really handle very well, and I believe they are trying their level best to get our trade and to do all they can for the shippers. They have really acted very well, whereas we find that shipping the other way it is quite different. Now, there is one very serious drawback in shipping to London—that our apples go mostly in cattle boats; that is to the London market. We find that our apples delivered direct in London by water arrive in a very bad condition indeed, and more than that, there is always a shortage. That, I think, occurs in going up the Thames; they are plundered right and left. The Allan Line Company wrote me expressing the opinion that the trouble did not occur by their line. I had billed their line through the London Dock Company for a very large amount. Of course the reply was that they were not liable, I went to the steamship companies in London, and they cast the blame on the rascally dock companies, and the dock companies in turn threw it back on the steamship companies. Of course the ground we took with the dock companies was this. We would say, "here is our bill of lading, we want that quantity—what it represents." "Oh yes," they would say, "we have delivered to you all we got, we can show our receipt from the steamship company." No doubt that is true, we had no means of proving it, but there the difficulty exists somewhere; there is that loss between the railway company, the steamship company and the dock company. It is pretty clear to us that it is between the railway company and the steamship company somewhere, and so far as this shortage is concerned we would hear no more about it if instead of giving the shippers count on the bill of lading the company's count was given. Now, it would pay some of our railway companies to try and give us a through rate *via* Liverpool, better than we have now going to the London market. We must withdraw from that direct water route to London; we would like to follow it up if they would carry our goods in proper shape, but the way they have been carried is disastrous to us, and we must go by Liverpool. We have to pay so much more *via* Liverpool that shippers often hesitate about it, but it often pays the difference; it did this last season, for they landed in far better shape in the London market. But the trouble is that we have to pay the local rate from Liverpool to London, and if some of our railway or steamship companies here would arrange with the English lines of railway and get them down to a proportion of the through rate it would be a great boon to shippers here. I did succeed in getting some little rebate from one of the companies in England on condition that I should turn all the freights right in to them, and I did for part of the season. The companies there are very stiff, however. They did not want me to confer with the other companies at all, but to deal with this one line by itself. There certainly ought to be a through rate to London with transhipment at Liverpool that would compare favorably with the through rate by water. Another thing is this; we find a very great difference in regard to correspondence. We find in correspondence with railway and steamship companies at New York and in the United States more promptness in replying. We can get the information we want more quickly. Here we find very great delay, though I will make an exception to a great extent of the Canadian Pacific Railway. So far as my correspondence with them has gone they are

very prompt and obliging, but there is a lack of that on the part of the Grand Trunk, whose authorities are very, very slow, in fact we have sometimes to carry through our transactions somewhere else while we are awaiting a reply from the Grand Trunk Railway. In regard to the steamship companies, it is time for them to consider the question of cold storage for our fruits. Here is one reason why I would like to get the same rate *via* New York as *via* Boston, I find there are steamship companies there which will furnish us that accommodation if they can only get the trade. Now, if our steamship companies here will not give us that accommodation it will be worth our while to pay somewhat extra in freight in order to reach the steamships there. So, as I said, it is time for the steamship companies to take it up, because it is not only in the interest of the shippers, but in the interest of the whole country. The compartment for this purpose should be kept apart from other freight, and ought not to be near the engines or heating apparatus of the vessel, that is evident. As a rule I think they try to carry that out as far as possible. Of course they have to make arrangements ahead of time for these freights in order to know the amount they are going to have, and so on, but there will be no trouble about that if the requirements are met with.

Mr. DEMPSEY.—With respect to that storage, would they ship in the same department as butter and cheese?

The PRESIDENT.—Fruit will partake of almost any odor, but I don't know that shipment with butter would affect it at all, and perhaps not cheese. I don't know that there would be any objection to that, but there are substances having strong odors which would very materially affect fruit, and affect the price of it in the old country.

Mr. DEMPSEY.—We have been corresponding a little upon that point with a steamship company, and they are willing to grant us the same privilege as men in the dairy business, and it occurred to me, if there was no danger of the fruit being affected by the butter and cheese, it might answer. This question of fruit shipment is one of great importance to fruit growers of Ontario, because the production of fruit is almost doubled annually, and it will be almost impossible for us to find a market for our fruit. When it is taken into consideration that our fruit is so much superior to the American or even European fruits, it is very important that we should get proper facilities for shipping them, and that we should learn at the earliest possible date the best form of package and so on. Now, I think that half barrels would be preferable, and it occurs to me in reference to cars, that a simple slatted door on each side would be preferable, and that some end ventilation is wanted, which I think, could be easily done. In regard to shipping *via* New York, there is one very great advantage that the lines *via* New York, whether per Canadian Pacific Railway or Grand Trunk Railway are all double tracked, which does away with a good deal of the shunting which so injurious to fruit. When a locomotive suddenly comes against a car and knocks it almost off the track, there is a kind of second jar of the barrels against each other; I have noticed sometimes that the jar was double, and often a barrel of apples is flattened one-third of the barrel; I have seen them coming out of the car a little crushed. Again when loading on the steamer, they use a kind of endless rope which is brought around half a dozen barrels probably. Of course, if it is done carefully it is all right, but it is sometimes done carelessly, and in such cases I have seen the rope slip and the whole lot of barrels roll down further than the length of this building and come in contact with some post or something, perhaps the side of a building, which would flatten them out, and, of course, some of the apples in those barrels would be crushed. In regard to the tampering that has been spoken of, our apples are sometimes tampered with, there is no question about that. I remember one instance in which we were trying to catch an order late in the English market for Christmas. We had great difficulty in getting it through; it was detained on the road, and when they did arrive there few of the barrels that had the full complement of apples left in them; some had not half a bushel left. Now, I don't want to accuse anybody of anything wrong, but that looked exceedingly suspicious, but how we are to get at the matter is a question. Whether it is done before or after they cross the Atlantic we cannot say, but on the English railways they are carried on what we would call a platform car, and covered with a canvas—about twenty-seven barrels on a car, which is a very small amount compared with ours. They are just set on end on the car and covered with the canvas thrown over

the top, and if the car is left in a railway yard, as sometimes occurs, it affords an excellent opportunity for pilfering. Still I must say, their police are about as perfect as you can find in any part of the world, and these things are always under the careful eye of a policeman. Still, however, I know they are tampered with sometimes. Now, we have had no difficulty in getting a bill of lading through by way of New York, and the difference is very trifling, I think only a matter of a very few cents per barrel between New York and Boston. We got them through for \$1.13, and at that time by way of Boston and Portland the bill of lading was very much higher, though now it is down again to seventy-five cents per barrel, so that through rates change very much, and that is a point I want to get at. Why should we be subjected to these wonderful changes from seventy-five cents to \$1.50? Perhaps, when you went there, expecting that the rate was seventy-five cents, you would find on asking that it was \$1.50, and it is exceedingly annoying to be told you have to pay just double freight. I cannot see why there cannot be some regularity in the business. The railway company invariably lays the blame on the steamship company, and *vice versa*, and that is the way it goes, and it really seems at times that they play upon us a little bit too much. I would not object to a uniform tariff of eighty cents per barrel all winter, because I don't think we will ever want to ship much of our fruit in winter, from the fact that during their transportation from here to the shipping point on the cars the apples become so chilled that when placed on board ship, even if there is cold storage, the atmosphere is so much warmer than the car that there is a large quantity of moisture condensed by the apples in the barrel, and they become so damp that the water actually drops out of the barrel sometimes. I need not tell anyone here that six days of that would destroy almost any variety of apples—being six days in that condition in a barrel; so I think winter shipments will have to be abandoned. I think the fruit growers will have to club together and manage in some way or other to procure storage in England and have some person to look after their interests when the apples arrive and such varieties as can be held to advantage stored until such time as they can be most profitably disposed of. I think we shall eventually have to adopt some such system as that.

Mr. SHEPHERD.—As a Montrealer, I am very glad to learn that rates are less *via* Montreal than *via* New York. At the same time I regret to hear that the handling, when they are sent *via* Montreal, is so much inferior. The remark was made that the steamship lines running to London carried cattle. If that is the case, I think all the lines running from Montreal to London are cattle ships; I do not think there are any first-class steamers running to London. But I don't see how we can ever expect to get as cheap a through rate to London as to Liverpool; I don't think it is possible.

The PRESIDENT.—It is not the same rate, it is a proportion of the through rate to other ports.

Mr. SHEPHERD.—Montreal is just awakening to the fact that she has not sufficient harbor accommodation, and if the plans which are proposed are carried out, you will have as good facilities for shipping fruit from Montreal in a short time as can be found at New York. One difficulty in Montreal now is, that they have not sufficient track accommodation on the wharves to bring the cars immediately alongside the vessel and put the freight on board without any intermediate handling and carting. I am in the forwarding business, and I see it every day. I think it would be to the interest of shippers of fruit to have an agent watching their consignments at points like Montreal and Liverpool.

The PRESIDENT.—We have tried that, but these agents were able to accomplish very little; the railway companies would tell them it was none of their business to open their mouths on the subject at all. Then, for small fruit they should supply different accommodation from that furnished for the large fruit. It is absolutely necessary that for small fruit we should be supplied with shelved cars, so that small fruits could be packed on the shelves in baskets or cases; and this should be supplied at the ordinary through freight rate. It is a serious question with the growers of fruit to-day, whether they should extend the area of their fruit growing. It is felt that the railway companies and steamship companies are very far behind the fruit growers—they have not kept pace with the times, and we cannot get the accommodation we want, and must have, if fruit growing is to become

profitable trade for the country. For this reason the officers of this Association feel some degree of diffidence in going to the farmers of this country and asking them to go more extensively into the planting of fruit. We know there are many of them inclined to do so; we know that they know very well that wheat growing for profit is a thing of the past, and that they must look to something else in the future. I do not know anything that is advancing so rapidly as a convenient and profitable trade for this country as fruit growing, and the farmers are learning that they can make more profit out of their orchard than any other part of the farm, and are strongly inclined to extend their operations in that direction; but we cannot advise them to do so unless the needful facilities for transportation are supplied. In buying fruit we are not able to pay them what I consider is a proper price for their product, simply because we run the risk of having a large amount destroyed or damaged, which destroys all the profit of handling them. Now, in my own part of the country we have a great many plums, and we would ship very largely of them were it not that the only way we can make a profit out of them is by shipping them by express in the early part of the season, but the express rates are so much higher than the ordinary freight rates that we are unable to continue that for any length of time. If for the ordinary freight rates we could get a car put on the express train we could easily load it to points wanting fruit like the plum, but we have found difficulty in getting them to do that, and the plum is a fruit that must be transported with rapidity, or it will not keep at all. Now these are serious matters, and if these railway and steamship companies take any interest in the advancement and progress of this province, they will take our requirements seriously into consideration. It is said that corporations have no souls, but we know that they have among them some very good heads at all events—they are reasonable men, and if these matters are laid properly before them, I think they will accede to our demands.

Mr. CASTON.—Have not the Grand Trunk already made a move in that direction?

Mr. A. H. PETTIT.—We have found a great improvement in that respect this last year. The Grand Trunk have taken it up, and we were furnished with shelved cars from St. Catharines through. They were sent by special train to Toronto, and from there sent by fast Merchants' Despatch to Montreal. I believe it took twenty-eight cars to keep it running. We took from two to three cars daily, some days four. We got our fruit put on board the cars in the afternoon, and it was only two nights and one day in going through to Montreal, and the rate we have been getting was very satisfactory indeed. Of course before that all our goods were sent through by express, and many times it cost just half what they were worth, and they were not very well handled either. By the present system we are allowed to load the cars ourselves, and could see the fruit carefully and properly put on the shelves. Another improvement we are in hopes of having effected is in the ventilation of the cars, which at present is not all that we could desire. In regard to shipping apples to the old country, I quite agree with most of the remarks of the President. In reference to shortages, we have never been troubled in that respect, and the bills of lading are generally made out by the agent in this way. The barrels are sent to the station as fast as packed, and as soon as there is a sufficient number there to make a car-load, the porter or some one at the station is authorized to load the car, and they load and give us a bill of lading, with their count, and I do not know of a single instance of shortage when it is done in that way.

The PRESIDENT.—That just proves the point I wanted to make.

Mr. A. H. PETTIT.—There is one great difficulty which arises in this connection. Some seasons you are successful, and another you may not be, in carriage across the ocean. One shipment we had last fall, a year ago, were all wet and wasty. The reply to me was that the apples must have been wet on this side. I knew they were not; they were put up very carefully, and put on board the cars in dry weather, and landed in Montreal in dry weather. I think apples are often far too warm on board ship; but still I don't fancy cold storage; it is too much of a change from cold to warm. Last year we made a shipment of about a ton of grapes to Glasgow. We had them put up in twelve pound baskets, just as we ship to Montreal or any other place. They were placed on shelves in the storeroom, and I asked our agent to see that they got plenty of air, not cold air, but whatever the temperature was, and those grapes arrived in perfect order,

and I think the every-day air is preferable. It strikes me that it would be a great improvement if a market could be established in this country where the representatives of the old country firms could come and buy their apples at the place of shipment. If this could be done they could follow their shipments, or see them loaded, which would be to their advantage, and their runners could meet the vessel at the wharf and look after their handling themselves. I suggested this to one firm on the other side at Liverpool—that we would be very glad to meet them on this side of the water. I think it would be very much to the advantage of the shipper, and I cannot see why not to the dealer in the old country also. We can put our apples up in very fine order, but we seem to have no control over them from the time they leave our hands until we get our return. We cannot say whether they shall be held for a higher market or sold the day they land, or the manner in which they shall be carried across. If we could combine and establish in this country an apple market, where buyers from all parts would come, I think it would be a great improvement. Take Toronto, for instance, which is the central point of an apple growing country. In time we could establish competition between the old country and the Northwest, for I believe the Northwest will yet take a large portion of our apple crop, and, from the experience I have had, I think the business will be far safer. I have had some ten years' experience of shipping apples to the old country, and it is very uncertain, and I think if an apple market were established here we would receive better prices than in any other way. I don't think it is possible for a man to buy and ship to the old country with any degree of safety unless he buys at very low prices. I have always thought that as high a price should be got for the apple crop as could be obtained, but I do not think it is possible for an apple buyer to pay high prices and ship with any degree of safety. We have been for years discussing the best varieties and trying to get the best, and the more choice the variety the greater is the care required in handling them; yet I think we have neglected the shipping department to a very great extent, not getting those facilities which we ought to have. I am inclined however to think from the experience of the past year, that the Grand Trunk are inclined to take hold of this matter, and improve to a great extent on the facilities they have afforded us in the past.

Dr. HURLBURT.—In reference to shipping Canadian apples, when I was in England I found the impression very generally prevailed that all the good apples came from the United States, and I find the same impression from that time to this. A few days ago I was conversing with a very intelligent gentleman from Scotland, who returns to Scotland every year or two, and he said they had the same feeling in Scotland—that they called all the imported apples American apples, though he had told them over and over again that they were Canadian apples. Can there be no means taken whereby the British public will know that these are Canadian and not American apples—not United States apples. I remember in 1862 some agricultural implements going to Belgium, among them some hay-forks marked "Oshawa, Ont." A buyer who wanted some of them made application to every state in the Union, and at last, quite by accident, discovered that "Ont." was in Canada. It was at that time advised that everything leaving Canada for foreign countries should be marked "Canada." Now, you know perhaps better than I do whether these shipments of apples go through as Canadian apples or not. We know perfectly well that the apple comes to its highest perfection in the higher latitudes, and therefore our apples are quite superior to those of the United States, and the English public ought to understand that the apples we send are from Canada. The gentleman opposite referred to the very important subject of whether apples would be tainted by being shipped with any other article. Now, I have had a good deal of experience in packing apples, and I find that there is scarcely anything that you can leave with them two or three weeks without their being tainted by it, either in the barn in hay, or in the cellar. I have always found that after three or four weeks they tasted of the substance surrounding them. Certainly I question the propriety of shipping apples in cattle ships; they would undoubtedly be very much tainted if shipped in a vessel of that kind.

The PRESIDENT.—So far as I know, shippers always make a point of labelling their barrels as Canadian, and so well known is the Canadian brand, and so well thought of, that I know firms in Chicago and Marquette, Michigan, who bought apples at my town

and shipped them to Chicago and Marquette, made different grades of them, and shipped them through to New York as guaranteed to be Canadian growth, although coming from Chicago. They found it was an advantage to have their fruit go to the British market in that way, and there is no doubt it is a great advantage. If you satisfy people on the British markets that your fruit is Canadian, there is a marked preference shown for it. Our apples land there in much better shape than the Americans' do; there is much more waste from heating and slack packing among the American apples than among ours. Where slackness occurred amongst ours this last season the fault was most certainly with the packer. The season before we expected to find a good deal of that from the fact that our apples were very badly spotted, and a spotted apple in a barrel will damage the others. Mr. Pettit spoke of difficulty in connection with cold storage. When we speak of cold storage for our apples, we do not mean ice-cold storage, but an atmospheric blast through the apartment in which they are stored, and perfect ventilation. When so treated they land in perfect order.

Mr. DEMPSEY.—I will mention just here an item of which we should not lose sight. I had in my charge, as you are aware, a large quantity of grapes when I went across, and all those placed packed in boxes, or baskets placed in boxes, had been rolled over until there were scarcely any grapes left. Those, however, which were packed in baskets with handles, and which they were compelled to pick up by the handles and use decently, arrived in perfect order. But just to show you the folly of labelling our packages, I will tell you what I have seen. I have seen cases of honey labelled "Extracted honey, handle with care; keep this side up." Well, the people handling them by express either could not read or else they did it wilfully, but you would invariably see these packages with the wrong side down.

Mr. A. H. PETTIT.—In regard to the prices for the grapes, I may say that some were reasonably satisfactory, some of our twelve-pound baskets of dark grapes brought from 2s. 6d. to 3s. 9d. White grapes were very much lower, but I think our returns would have been satisfactory for the experiment had it not been for the high charges we had to pay. The steamship was going out on the Wednesday, I think, and we sent them through by express, and the charges from Grimsby to Montreal were \$21.80, as against \$8.90 from Montreal to Glasgow. At the time that our grapes were sold in Glasgow, there were large quantities of white grapes being landed in Montreal, and selling in some instances as low as seven cents per pound retail. They said in Glasgow that there was an over supply of white grapes in the market at that time, but they hoped that another trial shipment of the dark grapes would be made, and from conversations I have had with some of our grape growers, it will be made another year, probably to London or Liverpool the next time. I also sent a few pears of the Duchess variety, and they sold very well. I think the Isabella sold the highest of any of the grapes; I think it brought 3s. 6d. per basket.

A MEMBER.—Did they complain of the foxy flavor of your grapes?

Mr. PETTIT.—They did not like the flavor of our white grapes, but they rather liked the flavor of the dark ones.

Mr. BOTHWICK (Ottawa).—In the early part of the season I bring in a large quantity of grapes from New York, which are grown south of New York. They are shipped to New York and re-shipped to me here, and my experience is that I invariably receive these grapes shipped in these carriers in better condition than grapes shipped from Ontario in baskets, so my experience in regard to crates is not such as given by Mr. Dempsey in regard to those shipped to the old country. I sent several of these carriers to my friend Mr. Pettit to have them filled as an experiment, but somehow the crates went astray and he didn't receive them. I might also say that my experience is the same with regard to peaches put up in these carriers, eight baskets in a carrier with a wire handle, and the early peaches that we receive here arrive in very good order in the carriers. They come by express, I think, and I never have any difficulty with them coming wrong side up. I may also say in regard to strawberries that the packages usually used contain fifty-four quart baskets. Well, these crates are not a handy package to handle and we all know they suffer a good deal by being roughly handled, but sometimes I feel that we can scarcely blame the men who are handling them, because the packages are so unsuitable

to my idea. There are very few men who can pick up a crate of strawberries and lay it down again as they ought, because they have not sufficient strength to do it. A few years ago I got Mr. Boyd, who lives in Brockville, to adopt a package containing forty-five baskets, which is much more convenient to handle, and I think I am justified in saying that the berries which come in these packages realize one cent a box more than those which come in the fifty-four box crates. I think if the growers in the west would look into this matter it would be to their advantage.

Mr. BOTHWICK.—I find they are not strong enough; they are usually set up one on top of the other, and they are not strong enough to stand the pressure, and usually arrive in Ottawa pretty much damaged.

Mr. CASTON.—Are the fifty-four basket crates that you have been getting properly ventilated?

Mr. BOTHWICK.—Yes; I might say that these crates are not made solid, but of narrow slats—the ones I have been receiving.

The PRESIDENT.—The fruits sent to the Colonial were sent purposely from all parts of the country as they were gathered up by express, thinking they would be so much better handled. The Dominion Government were willing to pay the extra rate simply to have those goods well handled. Well, all I can say, and Mr. Dempsey will bear me out, is that they looked when they arrived as if every official connected with the Express Company had jumped on them; they had all the appearance of having been tossed in every direction. There is another question, which Mr. Dempsey brought up, in reference to half barrels. My experience is that being so light they are more liable to be broken, they seem to take a delight in tossing them about, and they have been broken open in proportion far more than the others. The barrels themselves bear evidence of having been thrown from a height or something of that sort. The only conclusion I could come to was that the officials had been tossing them about in a rather lively fashion.

Mr. BRODIE.—I can endorse what the President has said about rough handling in Montreal; I have myself seen barrels with their heads knocked out and stuck in again.

Mr. DEMPSEY.—If a man has fifty dollars worth of fruit it will pay him to pay his fare to Montreal and back. Almost invariably this year where a man has gone to Montreal with his own fruit so as to see it shipped from there himself, he has done well, while those who shipped to agencies came out wanting. In regard to the Express Company, I may say that from Trenton strawberries are shipped by the carload, and we pay a very high rate for them, but they are badly knocked about, and sometimes we find that our car is loaded so heavily that it breaks down; I lost one time by reason of the car being loaded so heavily that it broke down, and they had to leave it somewhere. With respect to these large packages I have had some experience. In shipping to Montreal I have used the 84-basket crate. That bothers a fellow to lift, and he goes and gets someone to help him, for it takes two men to pick that up and carry it. I have gone myself with my shipments to Montreal, and staid there a little disguised, not wishing to be known, and seen how they handled my stuff, and I have seen them act as if they thought it was their duty to destroy all they could. That induced me to make arrangements with a man in Montreal to receive our goods on the cars, and the expressmen were not allowed to touch them. We used to set our stuff on the cars ourselves at Trenton, and our own men would take them off in Montreal. Now, I don't care what sized package it was they invariably went all right, and I say the Express Company ought to employ a more careful class of men.

Mr. MITCHELL.—This is not a matter just relating to the large shipper alone, but the general public are interested in it. I may say that I have suffered myself even as an amateur exhibiting at our fairs by the rough handling the express companies have given my plants. Last year I attended the London Exhibition, among others, and as I am not more than an hour's ride distant from London, you would imagine that the Express Company would be able to get my plants through in good condition for that short distance. But I started with thirteen pots, and when they got there there were only six that were not reduced to fragments, and of course the plants were not in much better condition than the pots. It is a matter of great interest to us all, whether shippers or not.

Mr. HAMILTON.—Is there anything better than a barrel for shipping apples?

The PRESIDENT.—There is nothing better than a barrel, if it has as little bilge as possible ; the three bushel barrel, the same size as the flour barrel, is the best size.

Mr. PETTIT.—I want to say just a word for the express agents. We are dwelling a good deal on the manner in which they tumble our packages about, but I think the companies alone are entirely to blame in the matter. Take our own station for instance. We have frequently three or four hundred baskets to go upon the train in the express car, and it is simply impossible for the express agent to do anything with them in the time that is allowed. They are allowed two minutes and a half or three minutes, and sometimes by having recourse to the telegraph we secure six or seven minutes. The agents on the train do their best, many of them, even young men, but they haven't the power; the arrangement does not give them the time, and even fruit growers themselves will pitch their fruit into the car hand over hand to get them in at all.

Mr. DEMPSEY.—We put on a car ourselves in three minutes two hundred cases of strawberries, and handled them carefully, too; but we had men enough to have a continuous string of cases going in two at once.

THE QUESTION DRAWER.

The Question Drawer was again opened, and the following inquiries read and discussed.

PERCENTAGE TO COMMISSION MERCHANTS.

QUESTION.—Is not ten per cent. too much for Commission Merchants to charge for selling fruit?

Mr. A. M. SMITH.—I am not a commission merchant, but I have been connected with a company which handles on commission, and if other commission merchants do not make any more than they do I don't think it is any too much.

The PRESIDENT.—I know that as far as large fruits are concerned five per cent. is usually considered enough. In the old country merchants are very glad to handle on commission for five per cent. Some of them may charge extra for fees, but they will make five per cent. cover everything if you arrange it in that way.

Mr. PETTIT.—I quite agree with Mr. Smith that if the goods are properly handled ten per cent. is not too much, except for very large lots.

Mr. SMITH.—Large consignments most dealers handle by the carload at lower rates.

PARIS GREEN FOR CODLING MOTH.

QUESTION.—What has been the experience of members with regard to the use of Paris green for codling moth?

Mr. CASTON.—That is quite an interesting question, as the codling moth is getting to be quite a pest in our part of the country. It is not convenient to turn animals into some orchards, and the codling moth is increasing very rapidly; I would like to hear from some one who has used the Paris green.

The PRESIDENT.—I have tried Paris green for the codling moth, and there is no question at all that if the Paris green is used at the proper time, when the young fruit is formed and almost upright on the stem, it can be used with very good effect; its effect will be very perceptible in the decrease in the crop of codling moths. I have known many apple growers to fence in their orchards, and allow hogs to run in them, and I don't know anything better than that for the destruction of the codling moth. Where they ring the noses of the hogs there is no digging of holes or anything like that, and we usually find the very best fruit in orchards where this practice has been followed. If there is any high wind at the time it is very easy to jar off the damaged fruit, and the hogs will eat every particle of them. In using the Paris green it is not necessary to use a large quantity; no larger quantity than we use for the curculio in the plum, a teaspoonful to a patent pailful of water, sprayed with a fine spray like gardeners use, and which in a large orchard can be used from a waggon. Taken at the season when the apple is formed and as the bloom is coming off, it will be found very effectual.

Prof. SAUNDERS.—As between hogs and Paris green for the codling moth, there is this advantage on the side of the Paris green, by using it you take the first brood, and have none of your apples or only a small quantity of them injured, whereas if you wait for the hogs you allow the first brood to have their course before the hogs are any use. I think it would be well to make the best use of both remedies.

The SECRETARY.—This question was handed in by Mr. Fletcher, and I am sorry he is not here, as there were one or two points which he wished to emphasize in connection with it. Something has been said by a correspondent in the *Horticulturist* as to the danger of some harm coming to the apples so treated; that perhaps the poison might find its way into the interior of the fruit, and Mr. Fletcher wished to state most emphatically that no such danger need be apprehended. While I am speaking I may state that I have been using Paris green for three or four years, but particularly the last two or three years quite extensively in a large apple orchard. This last year I used it in alternate rows in parts of the orchard, and the result has been to convince me of its efficacy, so that I have resolved not to omit using it in any part of the orchard again which I could possibly approach with the waggon and pump. The trees in the orchard which were not sprayed have given me a large amount of refuse apples, far larger than where the trees had been treated with the Paris green, and the most beautiful specimens are the ones found subject to the trouble.

A MEMBER.—Do you spray them more than once?

The SECRETARY.—I think if it is well and carefully done at the proper time, and the operation is not followed by any heavy rains the one application is enough, otherwise I give them two applications.

Mr. F. F. SHUTT (Chemist of Dominion Experimental Farm).—I did not come here prepared to speak on the whole question of Paris green as an insect destroyer. I may say, however, that Paris green is practically insoluble in water, and therefore I cannot conceive of its doing any harm to the apples it may be placed upon; there is no risk of its becoming incorporated with the fruit in any way, it would remain upon the surface, and with the small quantity used there can practically be no bad results.

Prof. SAUNDERS.—What about the flower of the apple absorbing it?

Mr. SHUTT.—I don't think it is at all possible. The Paris green is insoluble in water, and the grains would be altogether too large to be absorbed by the fruit.

Mr. BRODIE (Montreal).—I tried it a few years on apples, especially the Oldenburgh and Peach. The codling moth did not affect the Fameuse and St. Lawrence. The Paris Green had quite a good effect, but I would not recommend the use of it on cabbage by any means. Some of our market gardeners used it one year, and some one detected them using it, and it quite spoiled the sale of their cabbage.

Prof. SAUNDERS.—I think for cabbage some milder poison would be more advisable.

ADDRESS BY PROFESSOR SAUNDERS.

The following address was then delivered by Professor William Saunders, Director of the Dominion Experimental Farm, Ottawa :

Mr. Chairman and gentlemen, I hardly think it fair for you to call upon me for an address, or to dignify the few remarks I shall make by any such formidable appellation. As you know I returned from the west by the morning train, and I have not had time to make any notes more than I could jot down on the train, so if my remarks should be somewhat disjointed I trust you will bear with me under the circumstance. I have been so long interested in all matters connected with fruit growing that I should be indeed a dull scholar if I could not say something on a subject so fraught with interest, and of so much importance to the residents of all parts of this country. I think no one will disagree with me when I advance the statement that there is no country in the world in which the fruits of a temperate climate, such as the apple, pear, plum, and in some parts

the grape, can be grown in so high a state of perfection as in many parts of the Dominion. The portions of the country where this industry has been carried on to the greatest extent are naturally those which present themselves to our idea as the first and foremost fruit sections. But the selection of these spots, although of course there must exist in them the conditions material to a successful prosecution of the industry, has often been characterized by the presence of an element which might be termed accidental. An enterprising individual or two get together in a section where fruit can be grown to advantage, and as the result of their united energies and enterprise that part of the country soon becomes known as a fruit producing section, though there may be dozens of others just as good of which nothing is heard. I make this remark because it is sometimes thought that some districts are more highly favored than others for fruit culture, and I wish to guard myself by this explanation, as I feel perfectly assured there are many other districts in our different Provinces which have equal advantages; that outside of these spots supposed to have special advantages will be found many others possessing the same requisites for growing fruit for home consumption and shipping it for export. Now, we have at the present time in the eastern Provinces—I mean as distinct from the Northwest and Pacific Provinces—two special fruit sections; one made up of what is called Western Ontario, covering the district bordering by the great lakes, and not running far north, but keeping south and running into the Niagara Peninsula; and the other the Annapolis Valley in Nova Scotia. We are all tolerably familiar with Western Ontario and know the value of the large amount of fruit grown in that section, but we ought also to know that not one-tenth, probably not one-hundredth, of the quantity that might be grown is produced in any of the districts comprising that section; that the capacity of the soil has never been tested fully, because with orchards we always find associated fields of grain and pasture, which would make orchards just as good as those already in existence; so that in this respect there is practically no limit to the extension of the fruit industry. In Nova Scotia the same may be said. The Annapolis Valley extends about one hundred miles in length and five miles in width, and not one-twentieth part is occupied with apples. But this favored district does at the present time grow some of the finest apples in the world, and the reputation of our Canadian fruit is being built up by what is being done in this famous valley of Nova Scotia. Nova Scotia Gravensteins command a very high price in the British and American markets, and the Annapolis and other apples grown there possess a flavor equal, if not superior, to anything we can grow in Ontario. No doubt many other parts of Nova Scotia would prove equally adapted to apple growing. When last there I was told that formerly no one believed that fruit could be grown in Annapolis Valley, and that they devoted almost their entire attention to the hay crop. After a while, when they could no longer get the prices for their hay, they turned their attention to apples, the result being that the Annapolis apples are now held to be amongst the best grown in the world. The area of fruit culture there is extending very rapidly, thousands of trees being planted every year, and being near the point of shipment they have advantages that we do not enjoy in Ontario. They can put their fruit on vessels almost alongside their farms, or at a small cost they can reach the ocean steamships at Halifax. We have also in the Province of Quebec the Island of Montreal and many other districts in which exceedingly fine apples are produced, and I know from what were sent to the Colonial Exhibition that very large portions of the Province of Quebec could be well and profitably applied to apple culture, which are now occupied by less remunerative departments of agriculture. Now, from this standpoint the question very naturally suggests itself, can we find markets for this fruit if the industry is developed to a greater extent. Those of you who are familiar with the work of this Association for the last fifteen years will know that this is a question which comes up periodically. It is said that strawberries are overstocked, and that the price is lessening, but the consumption increases also; people are becoming educated to love fruit; they find it is a food which increases their bodily health and vigor in addition to the enjoyment it affords in the eating; and when that taste is generally developed people will not be without it if they can get it at reasonable prices. I don't suppose I can tell you anything about fruit growing in Ontario except in a general way. We have, as you know, fruit everywhere; we have

moths, blight, black knot, spot and a number of other things to contend with, but it is the same in every department of industrial life; there are difficulties to contend with everywhere. The farmer who raises stock has to contend with pleuro-pneumonia or some other disease; so after all the fruit grower who exercises reasonable vigilance is no worse off than is fellows in other departments of work in connection with farming in this country. Perhaps I may say a word as to the other part of Canada which I referred to in my opening remarks—the Northwest. There is no doubt, as was said by one of the speakers here to-day, that the Northwest will from this time on be a very large consumer of fruits grown in Ontario, though we hope before a very great while, if we can find varieties of trees which will succeed there, they will grow fruit there for themselves. In the meantime, however, people are flocking into that part of Canada very fast, and they will be willing to pay any reasonable price for good fruit, and that will be a good market for Ontario—that is Manitoba and the eastern part of the Northwest Territory. When you get still further west into the Territory you have British Columbia to compete with. In British Columbia, between the mountains and the ocean, there are growing some of the finest orchards of apples I have seen anywhere, and as to pear growing, they have the most beautiful pears, and their fruit is very free from spot or any disease such as we are troubled with here. As I do not want to paint it in too glowing colors, however, I may say that their apple trees are subject to a blight. There is also this disadvantage, they have not the large areas of contiguous country as you have here on which to grow fruit, and the fruits will be grown in that country, if I may use the expression, in patches, here and there, with mountains intervening, and not accessible by roads, but accessible by streams which flow through the country. Still I think it would not be wise for Ontario to look too much to supplying the western part of the Northwest Territory, on account of its proximity to British Columbia. The export of Canadian apples varies a little according to the character of the crops. Some years we have abundant crops and at other times they are not large, but I am persuaded that farmers at the present time could not do better than extend their orchard planting; I think the area of land used for that purpose might fairly be doubled or trebled before even all the present avenues for their disposal would be filled. A gradual process of education is going on, especially in Europe, where there are very many people who scarcely ever taste fruit, and the consumption must eventually increase, and I do not think there is any fear of our farmers going into fruit culture to such an extent that it will not pay them more per acre than any other crop they raise, year in and year out. The discussion which took place this morning in regard to growing plums in the Ottawa Valley was to my mind a very strong argument to show the necessity of some place where all these seedlings can be brought together and tested and compared, and their actual value under the same conditions of soil and treatment given to the public. We heard this morning a number of accounts in regard to different varieties of fruit. Some that one person would find preferable others found of no account, but how are we to tell unless their fruit was grown under the same conditions? There might be a variation in the soil, there are differences of situation, more sunlight, air, and so on, that affect the flavor and other properties of fruit. Hence it is clear, so clear that I do not think it is necessary to make it any clearer, that the establishment of these horticultural farms is of quite as much importance as the testing of cereals or any other of farm produce. In the Experimental Farm, of which we have all heard more or less, we are endeavoring to fill this want. A large area has been set apart for the purpose of testing fruit trees, and fruits of all sorts are being accumulated as fast as we can get hold of them. We try many things which we do not expect to succeed in, because if anything is left untried some early visitor is sure to ask if we have tried it, and if we did not why not; how do we know it won't succeed. Acting on that principle we are trying to test everything, and among other things we are testing some of the new varieties of plum, of which you have been told to-day. There are some little points in connection with testing these varieties. Those of you who live in the Ottawa Valley know that the nights are sometimes cold, and then in the daytime the heat of the sun on the partially grown wood frequently causes a rupture of the bark and we are beginning to try and work out in this connection how much protection we can give trees to preserve

them from—if I may use such a word in connection with sunlight—this deleterious influence. If by protection a tree can be brought over the first year or two, until it has reached a proper stage of development, it can then take care of itself. I think that is one of the important things in experimental work—that trees should have a chance to tide over the tender part of their existence, until the bark becomes hardened. We know the bark undergoes very material changes, and I think there is something in this. Then, in regard to new varieties. Those who have experimented in the production of new varieties of fruit know that once the chain of continuity—if I may be allowed that expression—is broken, and one species is crossed with another species, that the seedling of that variety is changed in many directions. Now, if some of these hardy Canadian plums can be crossed with some of the other varieties, though we may not get what we want the first time, or the second or third time, it is worth trying two or three hundred times, in order to get a hardy variety. From this seedling we hope to get a variety suitable to the Ottawa Valley and those portions of Quebec which have a similar climate. If you look back and see what has been done in grape culture alone where the course I have outlined has been systematically followed, you will see that Canadian and American grapes have been crossed with European varieties, and that the hybrids which have partaken more or less of the qualities of both species are the grapes of the greatest value to-day. In the Ottawa Valley grape growing has been more successful than the cultivation of the plum, and I believe I am safe in saying that where Ottawa has competed even with Niagara, they have carried off the palm, showing that we have conditions of soil here, and heat in summer, which favor the maturing of the grape and bringing it to that degree of perfection which is desirable. Mr. Pettit was telling us this morning about a shipment of grapes he had made to the old country ; he did not tell us what varieties the white grapes were, but I understand they were the Niagara and the Pocklington. Now, both those varieties are what is called very "foxy" in taste. I had a gentleman from England to see me during the summer, and I took him to see my vineyard in London, Ont., and picked him one and another grape of different kinds to taste. Every variety that had this characteristic of foxiness in any marked degree this gentleman turned up his nose at. It is evident that it requires a little education to enable one to appreciate that flavor ; I can appreciate it myself, though I don't care about it very strong, but the English public have never been educated to that taste, and I am afraid the course of their education will be too expensive for us to undertake, and I think I am probably correct in saying that the presence of that foxy flavor was more the occasion of the non-success of Mr. Pettit's white grapes than their color. I think in connection with this subject of grape growing that we want to get a variety of grapes free or nearly free from that flavor, large enough to be presentable for market purposes, good enough in every respect to eat, and at the same time hardy enough to stand the climate in most of our territory. We want to pursue that line from year to year, never swerving until we attain the point we want to reach. If we work with sufficient energy and vigor, pursuing those lines of investigation which are indicated by experience to be the best, we shall by-and-by attain the measure of success we all desire. In connection with this system of Experimental Farms we propose to test at all the outlying stations everything that is likely to prove of value in the territories in which they are located, and I hope we shall be able to show the people of Nova Scotia that not only in the Annapolis Valley, but in almost every other valley they can raise good apples ; and the same with Prince Edward Island, Quebec, Ontario, Manitoba, British Columbia and the North-west. We want all fruit growers, as well as farmers, to take sufficient interest in these institutions to help us in the work ; we don't want money help, but we want their assistance in carrying out these experiments, and if they know of a good variety or a likely seedling in their neighborhood to let us know of it. We want as early as possible to get up a large orchard for the purpose of testing these seedlings now scattered all over the different parts of the country, many of which are of great promise, though having only a local name, not having been seen by more than a few people. You can all help us in this way. I have just been presented with the *Canadian Entomologist* ; I am happy to know that it is still in existence ; it is the organ of a Society which you all know as a valuable coadjutor or sister, we may call it, of the Fruit

Grower's Association. I am happy to see here Mr. Denton, a member of the Council, who I am sure will be glad to give any information as to the working of the society, which I believe is doing a good work; the more we have of these societies the better it will be for all of them. It has been my aim in connection with the study of agriculture, and with this Experimental Farm, to do all I can for the country, and I shall be glad to hear from any of you gentlemen, or any others who may be interested in this subject, and to do everything in my power to advance the progress and interest of fruit culture in this Province.

The PRESIDENT.—We have all listened with great interest to the Professor. Although we did not, as he says, give him any notice, he knows it was because we had such unlimited confidence in his ability to speak on this subject at a moment's notice.

FRUIT REPORT.

The Committee on the Fruit Exhibit presented the following report :

We your Committee on Fruits beg leave to report that we have examined those on the table and have arrived at the following conclusions :

D. O'Connor, Ottawa, exhibits fine varieties of grapes, Lindley, Agawam, Brighton, Delaware, and one of Rogers, not named correctly, which resembles Salem. These were kept in shallow, paste-board boxes, in a cool cellar.

Hon. R. W. Scott, Ottawa, showed three varieties, Lindley, Agawam and Iona, packed in layers of cork dust at the time of picking.

Smith & Kerman, St. Catharines, displayed very fine samples of the Vergennes, kept in hardwood sawdust.

These grapes having been kept with different treatment, and all of them in fairly good condition, goes to show that this fruit can be preserved for most of the winter in a fresh state for table use, and that it would be well worthy of the attention of fruit growers to experiment more fully in that direction, the simplicity of the modes of storage being within the reach of all.

APPLES.

G. C. Caston, Craighurst, Muskoka, exhibited four varieties of apples, as follows : Ben Davis, Golden Russet, Grimes' Golden, and one variety shown by him as Red Pound, supposed to be a seedling, of large size and handsome appearance but past its season, so that your committee were unable to report on its merits. He also showed in glass jars some very fine specimens of Cuthbert and Gregg raspberries.

Smith & Kerman exhibited very fine specimens of their new seedling apple, Princess Louise. In color it closely resembles Maiden's Blush, flesh white, tender, crisp and juicy, with a delicate flavor. Well worthy of extended trial.

Mr. P. C. Dempsey, of Albury, showed an apple small to medium in size, in outside appearance somewhat resembling the Snow Apple ; flesh yellow and of fair quality—a cross between Golden Russet and Northern Spy, it does not resemble either of its parents.

J. S. McCallum, M.D., displayed a seedling apple originating near Smith's Falls, about the size of Baldwin, yellow ground, nearly covered with red, interspersed with large dots. The tree has proved to be hardy in the locality where it is growing, and on that account it is well worthy of trial in the colder sections of the Province.

A fine seedling was shown by Alba Rose, of Dixon's Corners, Ont. It originated at Williamsburg, said to be as hardy as Duchess. Fruit medium, oblate, light green shaded and obscurely splashed with dull red ; flesh white, tender, mild, subacid.

N. Robertson, Superintendent Government Grounds, sent to decorate the tables two pots of beautiful plants. An Orchid named D'Endrobum Wardianum, and Medinilla Magnifica.

Respectfully submitted,

P. E. BUCKE,
R. B. WHYTE,
W. W. HILBORN.

THE MOST ADVANTAGEOUS MEANS OF INTRODUCING NEW FRUITS.

The paper on this subject was read by W. W. Hilborn, of the Experimental Farm at Ottawa, as follows :

The present system of introducing "New Fruits" has been attended with a great deal of dissatisfaction, and the loss of thousands of dollars to the country every year. A very large proportion of the new fruits are sent out before they are thoroughly tested by the side of many of our old standard varieties with the same care and cultivation, hence the great number of varieties of little merit.

I do not wish to say one word to discourage those engaged in growing seedlings, but to the contrary, think every man interested in fruit culture should do all he can to encourage that good work, and no one knows better than the man who has disseminated a valuable fruit, what a difficult task it is to introduce a new variety of merit and get ample remuneration, simply because so many worthless varieties (or at best, varieties not equal to our old standard sorts), are being pushed out every year with such nicely written testimonials that, were we to believe one-half what was said in their praise, we would feel like buying out the whole stock ; but how few comparatively are heard of after they become distributed throughout the country and begin to bear fruit.

In most cases there is no intention of dishonesty on the part of the disseminator ; quite often they are men who have not seen much of the variety they are introducing, but use testimonials from men whom they think are reliable, and no doubt they are usually honest men, but not having had a chance to compare their new fruit with many other standard varieties with the same care and cultivation given their own seedlings. Then again, it frequently occurs that a new variety will do remarkably well in the locality where it originated and prove to be nearly worthless outside of that locality, hence the necessity of having them tested over as large an area as possible before introducing them.

The time has come when fruit growers should do all in their power to encourage a more thorough system of testing new fruits before they are offered for sale.

There is a very strong feeling on the other side of the line that something should be done in that direction.

Having conferred with some of the prominent horticulturists of the United States on the subject, we came to the conclusion that if the various fruit growers' associations and the horticultural press would use their influence for that purpose, a change could be brought about that would be of great value.

Now that nearly every State will have their experimental station, and Canada with her system of experimental farms throughout the Dominion, there can be no good reason why they should not be made use of for that purpose.

Every wide-awake nurseryman must have some new fruit to introduce from time to time ; he is anxious to have the best he can procure, and would much rather have a fruit that has been thoroughly tested and proved valuable over a large area, yet if he cannot find such, he takes what is to be had, and we all know the result is that not one out of twenty will compare at all favorably with many varieties already in general cultivation.

If it could be made popular to have the originators of new fruits send out enough of their plants (as soon as they could be propagated), to a number of experimental stations, of any varieties that show sufficient good qualities to be worthy of such a trial and not have them introduced until the disseminator could publish testimonials received from several experimental stations, those testimonials to be only such as would be published in the reports of the respective stations, it would be a great step in advance.

The originators of any valuable fruits thus tested would be able to dispose of their stock to advantage and the disseminator would not require to use so many exaggerations in colored plates and testimonials.

I think this method would be the most advantageous to the fruit grower and also to the originators of any valuable fruits.

It is the object of this paper to bring out discussion and suggestions from this Association, both at this meeting and through the columns of the *Horticulturist*, and if any better method can be suggested than the one hinted at above, I shall be glad to accept it, and do all I can to help on with a work that I believe is very much needed.

It is a matter that requires a good deal of careful thought, as it is only by combined effort that any good can be accomplished.

I would recommend that a committee be appointed by the President to whom the matter can be referred, and that the committee be requested to meet sometime during the session and report at their earliest convenience.

Mr. A. M. SMITH.—I think Mr. Hilborn's paper is a very valuable one, and the subject of which it treats is one which all engaged in fruit culture are somewhat familiar. We all of us have often put our hands in our pocket to secure new varieties which have been lauded to the skies and which, after a few years experience, we have found to be practically worthless. If something of the kind proposed could be done it would be a great boon to the fruit growers of the country. I think the suggestion to appoint a committee to consider this matter is a good idea.

The PRESIDENT.—I think there would be some difficulty in nominating a committee myself, because it would be hard to appoint a committee that would meet here at that particular time. I think the best committee we could possibly have is that composed of the Professors and Managers of the Experimental Station here. I think the country at large would place implicit confidence in them, and that their experiments would be observed, and their results looked forward to with a great degree of interest by fruit growers, not only in Canada but in other countries. Of course it would not be reasonable to suppose that because an experiment made here was successful, it proved that the tree or plant it was made with was going to be a success all over the country, but it will be a basis for other experiments, and a succession of experiments will go far to prove the thing. We must be prepared to put up with a deal of imperfection, and those in charge of the stations must not, and will not, be discouraged if they do meet with a great many drawbacks and imperfections in their work; that must be expected, because it is a matter of experiment from first to last.

Mr. HICKEY.—I think the experiments made here in Ottawa would be satisfactory to all the people living in a similar region; that the tests would be conclusive so far as those living in a region where a similar conditions prevailed.

Mr. CASTON.—I was very much pleased with Mr. Hillborn's very practical paper, and think it contains very many valuable ideas, and I think the plan pointed out by him is very good. Our country, owing to its geographical conformation, varies a great deal more within a few miles distance than any other part of North America, but I think the position of the Experimental Farm will afford a very good test for any part of Ontario. I was going to suggest some scheme under which the Ontario institution at Guelph, could be looked upon as a criterion for Western Ontario, and the two institutions might work together in harmony.

THE ENGLISH SPARROW.

Mr. T. McIlwraith, F.O.S.N.A., and Supt. of the District of Ontario for the Migration Committee of the American Ornithologist's Union, of Hamilton, Ont., contributed the following paper :

Economic ornithology is at present receiving a good deal of attention in various parts of the world, and its importance increase, as we are favored from time to time with the results of investigations which have been made regarding the food of birds in relation to agriculture, horticulture, and forestry. Mammalogy also claims a share of attention in this connection, and though we, in Canada, have no special grievance to complain of in this department at present, yet in the far distant lands of Australia and New Zealand the amount of damage which has been done by the introduction of the English rabbit, is almost incalculable, and may well serve as a warning to other countries to exercise due care when introducing strangers to reside within their borders.

In Canada, when the settler has cleared his first patch and raised a log house on his bush farm, one of his first steps towards making a home is to raise a few chickens, which usually appear in due time ; but scarcely are they permitted to become familiar with the surroundings before they are scooped up by the hawk. This, of course, enrages the settler, who brings powder and shot into immediate use, and takes revenge on every hawk and owl that comes within reach. This serves for a time to allay the irritation caused by the loss of the chickens, but a better knowledge of the food habits of the bird would have showed him that the greater number of hawks never touch poultry at all, and that the service they render by the destruction of mice far more than compensates for the few chickens destroyed. As it is with individuals, so it is with communities ; hasty conclusions are arrived at which may be acted upon for a time, but eventually they must yield to increased knowledge of the subject under discussion.

As an instance of this may be mentioned the "Pennsylvania Scalp Act," which was passed so recently as 1885. This Act provided for the payment of a bounty of 50 cents each, on all hawks, owls, minks, and weasels, killed in the State, with an additional 20 cents each to the justice taking the affidavit. This Act was in operation for a year and a half, but it was urged by a few close observers that the killing of the hawks and owls removed the check which nature had placed on the mice, which were now on the increase and doing so much damage, that eventually the Act was repealed. Dr. Merriam, in his report to the Department of Agriculture at Washington, for 1886, goes into figures on this question, which will surprise those not used to making such calculations. Here is an extract : "By virtue of this Act, about \$90,000 has been paid in bounties during the year and a half which has elapsed since the law went into effect. This represents the destruction of at least 128,571 of the above mentioned animals, most of which were hawks and owls. Granting, that about 5,000 chickens are killed in Pennsylvania by hawks and owls, and that they are worth 25 cents each, a liberal estimate in view of the fact that many of them are killed when very young, the total loss would be about \$1,250, or for a year and a half \$1,875. Hence it appears that during those eighteen months the State expended \$90,000 to save its farmers from the loss of \$1,875. But this estimate by no means represents the actual loss of the farmer and taxpayer of the State. It is within bounds to say that, in the course of a year, every hawk and owl destroys at least one thousand mice, or their equivalent in insects, and that each mouse or its equivalent in insects would cause the farmer a loss of 2 cents per annum. Therefore, omitting all reference to the enormous increase in the numbers of these noxious animals, when nature's means of holding them in check has been removed, the lowest possible estimate of the value of each hawk and owl to the farmer would be \$30 for a year and a half. Hence, in addition to the \$90,000 actually expended by the State in destroying 128,571 of its benefactors, it has incurred a loss to its agricultural interests of at least \$3,947,130 in a year and a half, which is at the rate of \$2,631,420 per annum, or, in other words, the State has thrown away \$2,105 for every dollar it has saved. And even this does not represent fairly the full loss, for the slaughter of so large a number of predaceous birds and mammals is almost certain to be followed by a corresponding increase in the number of mice and insects formerly held in check by them, and it will take years to restore the balance blindly destroyed through ignorance of the economic relations of our common birds and mammals.

Among birds, the two which are receiving most attention in the United States at present, are the rice bird, or bobolink, and the house sparrow. Of the former we have little to say, he is here a summer visitor, and during his stay makes our pasture fields ring with his merry gurgling song. Early in fall, young and old gather together in flocks and pass away to the south, and it is there he makes his presence known in a manner most disastrous to the rice growers. Hundreds of men and boys, armed with shot guns, are employed to guard the fields, but as the vast flocks of birds arrive from the north, they find themselves quite unable to either scare them off, or sensibly reduce their numbers. A recent calculation has made out the loss of the planters from this cause to be about two million dollars annually. As regards the economic status of the house sparrow, the case is somewhat different.

He is comparatively a recent addition to American birds, and for the first few years of his residence was here in limited numbers and attracted little notice. It was in 1850

that eight pairs were landed in Brooklyn, housed over the winter, and turned loose in the spring. In 1852 and again in 1858, other shipments were received at adjacent points in New York, all of which were turned loose and appeared to do well. But it was not till about 1870, that the species seemed to be fairly established, and generally distributed throughout the cities in the Eastern States, soon after which it commenced its march westward, arriving in Hamilton in 1874. Here it was welcomed as an old friend by many of the citizens who had been familiar with its appearance in other lands, and a commodious house was erected in a prominent position, at the expense of the city, for the use of the birds. In this they remained till it was filled to overflowing, and the surplus finding suitable accommodation throughout the city, made it apparent that the birds were quite capable to shift for themselves, and the house was taken down.

From that time till the present, the rapid increase and distribution of the species exceeds anything that has heretofore been known in the history of birds. Along the Atlantic coast it extends from Southern Georgia to the Bay of Chaleur, while inland it has got as far west as Central Kansas and Nebraska. A colony is also established at New Orleans and another at Salt Lake City. On the Pacific coast, the only point where they have gained a footing, is at San Francisco, but small settlements have been observed at many intermediate points, which will, no doubt, in time join together and make the chain complete across the continent.

Among the explanations given of the diffusion of the species over so large a territory in so short a time, may be mentioned its extraordinary power of reproduction. Dr. Merriam tells us "that, in the latitude of New York they raise 5 to 6 broods in a season, with 4 and 6 birds in a brood, making, say 26 in all at the end of the first year. If we assume that all live together, the sexes being equally divided, they will thus at the end of ten years have reached the extraordinary number, 275,716,983,698." The house sparrow thrives best in the proximity to the dwellings of man, finding there both food, shelter and exemption from the attacks of birds of prey, which do not often visit cities. It is also hardy in constitution, and capable of enduring the extremes of temperature, as seen in its being found from New Orleans to Lake Superior. On reaching a new section of country, they first fill up the towns and villages, after which the surplus moves off in different directions, and so keep on appearing in districts where they have not before been observed. Much has been written about the migration of birds, and the wonderful instinct which enables them to travel with such certainty between far distant places, but the sparrows, though not migratory in the ordinary sense, go ahead of all other birds in this respect, by getting into empty box cars, travelling hundreds of miles, and being let loose free of charge. In this way the first individuals reached New Brunswick in 1883. in empty box cars from the west, and in like manner several have been carried to the north of Lake Superior, on the line of the Canada Pacific railroad. Having thus glanced but slightly at the extraordinary rapidity with which the sparrow has increased in numbers, and its wonderful adaptability to climatic variations, it becomes highly important to ascertain as far as possible, whether it is a benefit to us or the reverse, and to what extent. As the birds were first introduced into the United States, so the American government has been first in the field in taking notes on these important points, and so far the evidence is almost against the sparrow. Dr. Coues, one of the leading American ornithologists, says: "Imported during a craze which even affected some ornithologists, making people fancy that a granivorous censstral bird would rid us of insect pests, this sturdy and invincible little bird has overrun the whole country, and proved a nuisance without a redeeming quality."

Among other charges brought against the sparrow, it is accused of driving away our native birds. That such is the case, no one can doubt, who has given any attention to the subject. The cat bird, oriole, house wren, window swallow, cliff swallow, blue bird, chipping sparrow, song sparrow, yellow warbler, are all subject to continued persecution, and are liable at any time to have their nests torn out, and the young or eggs destroyed. Under these circumstances it is not to be wondered at that many of the native birds have left their former haunts, and in a few years we may expect to find the sparrow in undisputed possession of our gardens and shrubberies. We are thus deprived not only of the cheerful song and sprightly society of our native birds, but also the valuable service they

render in the destruction of our numerous insect pests. Among the gardens and orchards of Canada, the birds have not yet appeared in such numbers as in some of the older settlements, and the amount of mischief they are capable of doing is not fully understood. But if anything can be done to drive them off in some other direction, now is the time to try it, before they get so numerous as to be uncontrollable, as they are in many of the States where they first settled. From the Department of Agriculture, at Washington, have been issued circulars asking for information regarding the habits of the birds, and from every State in which they have settled, the circulars are being returned filled with details of their ravages and the loss thereby entailed on gardeners, fruit growers, and farmers. Indeed, it is safe to say, that it now exerts a more marked effect upon the agricultural interest of this country than any other species of bird, and its unprecedented increase and spread taken in connection with the extent of its ravages in certain districts, may well be regarded with grave apprehension. Not only are the fruit buds of the grape vine, peach, pear, plum, cherry, apple, currant, etc., destroyed, but lettuce, beets, peas, radishes, cabbages, are all liable to be attacked as soon as they appear above the surface, and in some places the seed has been dug up before it germinated, to prevent which the beds have had to be covered with netting.

Abundant evidence is also furnished by farmers in different parts of the Union, regarding the damage to their crops by sparrows, from which the following is selected. Mr. Platt of New Haven, Conn., says: "I cradled a small piece of oats, and the sparrows gathered on it in such numbers that I killed 54 with one barrel and 25 with the other, and in our seed garden we had to keep a boy going around all the time to prevent waste of cabbage and other seeds." Mr. I. H. Gurney, the well known British ornithologist, says: "I think they do enough harm to warrant everybody in killing them, say one-fifth good to four-fifths harm is about what they do, take the country all over, though in certain places at certain times they do nothing but harm. I have striven to say all I could in their favor, being naturally a lover of birds." Miss Eleanor Ormerod, consulting entomologist of the Royal Agricultural Society of England, in her ninth report on injurious insects and common farm pests, for 1885, states, that the sparrows drive off swallows and martins, thus permitting a great increase in the flies and insects destructive in the garden and orchard. Miss Ormerod cites a case in which the destruction of the sparrows, and consequent reappearance of swallows and martins, resulted in the abolishment of the insect pests. Professor Lintner, entomologist for the State of New York, writes in the same strain in regard to the Tussock Moth, the caterpillar of which is very destructive to the foliage of fruit and shade trees. These insects, it is stated, have increased rapidly during the last ten years, owing chiefly to such birds as the robbin, the Baltimore oriole, and the two species cuckoo, which formerly fed on them, having been driven away by the house sparrow. From Louisiana comes a report from one of the rice planters, that the sparrows have now attacked the rice plantation, and threaten to rival the bobolink in the extent of their ravages.

Indeed, so widespread and so general are such complaints, that the house sparrow at the present time promises to be the most baneful pest the American farmer has ever had to contend with. Keeping all these facts in view, the American people do not intend to let the subject rest. They do not think it expedient at the present time to offer bounties for the destruction of the birds, but think it perfectly feasible to accomplish a great reduction in their numbers by the united action of the people, aided by intelligent legislation, without drawing upon the public purse. Among the recommendations are the immediate repeal of all existing laws which afford protection to the house sparrow; the enactment of laws legalizing the killing of the house sparrow at all seasons of the year, and the destruction of their nests, eggs, and young; the enactment of laws, protecting the great northern shrike, the sparrow hawk, and the screech owl, which feed largely on the sparrows. Those who have the sparrows nesting about their premises are also requested to aid in the riddance of the pest, by the systematic destruction of their nests, eggs, and young, a long light pole with an iron hook at the point being found most serviceable for the purpose. A most effectual mode of driving the birds from their roosting places under verandahs, etc., is the occasional use of the hose, a few successive applications being found sufficient for the purpose.

In Canada the sparrow question has not received the attention it deserves. This is probably owing to the fact that the birds have not yet appeared in such numbers as to call for immediate steps being taken to check their increase, but here as elsewhere they are every year, becoming more numerous and there is no reason to doubt that in a very short time our gardens and fields will suffer, just as they have done in sections where the birds have been longer settled. In a report on forestry, recently issued by the government of Ontario, there is a chapter devoted to the preservation of birds. The so-called shooting matches in which young men tramp over a given district and try who will kill the greatest number of birds and squirrels are very properly denounced. The means being taken in the United States to reduce the number of sparrows is also being referred to, but no similar action is recommended for Ontario, neither is it suggested that such may become necessary. This, I think, is a matter of regret, as Ontario may justly feel proud of her fruit, and it is a matter greatly to be deplored, if so severe a scourge is being fostered among us, without anything being done to check its progress. Dr. Brodie, of Toronto, who has for several years past been taking notes on the food of the sparrows, has submitted the result of his observations to the Canadian Institute, an abstract from which appeared in a recent issue of the *Toronto Globe*. Dr. Brodie is an ardent lover of birds, and approaches the subject with an evident desire to spare the sparrow, or at all events to say the most that can be said in their favor.

The observations have been made with a great deal of care, and are, no doubt, perfectly reliable. Several ladies and gentlemen of Toronto have assisted in their work, and from all of them came repeated notice of the birds having been observed destroying the buds of fruit and shade trees throughout the city. But they also get the credit of taking some insects; thus from March 1st till October 31st, 1885, the stomachs of 237 birds had been examined, and 104 or about 43 per cent. of them contained insects of several orders. Special mention is also made of their being observed killing grasshoppers. This seems to be an acquired taste, which, it is to be hoped, may improve on cultivation. I have seen a sparrow capture and devour a grasshopper now and then, but it seemed to be but an individual taste, for where several sparrows and several grasshoppers were near each other, the engagement did not become general. Dr. Brodie deserves credit for the time and attention he has devoted to the subject, which many who are more directly interested in it have failed to do. Its importance can hardly be overestimated, and now that attention has been directed to it, let every gardener, farmer, and fruit grower in Ontario keep a close watch on the movements of the birds, and satisfy himself whether or not they are injurious, for if they are so now, the injury will assume gigantic proportions as the birds increase in numbers, and it may then be too late to cure or prevent it.

Professor SAUNDERS.—I think the paper is a very valuable one, and that its effect should be the taking of some steps in the way of an expression of opinion on the part of this Association as to some action being taken at once. The sparrows are multiplying very rapidly, and where they have not already done so will doubtless soon become a very serious source of injury. I have examined the crops of a great many sparrows and I have come to the conclusion that there is only one period at which they destroy any material quantity of insects—the period during which they are feeding their young; and even then, they are just as liable to destroy those insects which are beneficial as the injurious ones. But even when they are feeding their young, if there is any soft food, such as cherries, obtainable, they much prefer it to the trouble of hunting up insects, and in the crops of a number of young birds which I have had examined I have found, in the cherry season, the stomachs filled with a goodly proportion of fragments of cherries and cherry juice. I have also known them to eat the buds perfectly clean off some of my pear trees. They will devour the buds of the currant very freely also, and if they can compass all this mischief when their numbers are comparatively few, what may we expect when they are increased to the extent which under present circumstances seems inevitable.

The SECRETARY.—Are they protected by the Legislature of our Province?

Prof. SAUNDERS.—I think they are.

MR. FLETCHER.—In reference to this point, I may say that I recently received a letter from England by which I learn that practical agriculturists are making an effort to have the sparrow removed from the list of protected birds there, as they are giving a great deal of trouble. The letter says, "An effort is being made in England to have them removed from the list of protected birds by practical agriculturists. At present there are heavy fines to those who kill the wretched bits of feathered individuals, and I certainly think the enormous increase in the last few years may be attributed to the natural enemies of the birds' nest, the boys, not pulling down their nests." I think there is a great deal too much sentiment mixed up with this question of injurious birds even now.

MR. BRODIE.—I have had about the same experience as Professor Saunders in regard to cherries and pear buds. I have noticed that my Flemish Beauties were cleared off by the sparrows.

THE SECRETARY.—I observed last spring when the cherry and plum were in bloom the sparrows were congregated in the trees and eating up the little buds of the fruit that was forming. In regard to their destruction, I saw it stated the other day that an excellent method was to scatter a large quantity of crumbs of bread saturated with alcohol around, and that after they have eaten them they will soon topple over and can be easily swept up in large numbers.

MR. CASTON.—In our part of the country the sparrows are far too cute to eat buds ; they just go into the barn and help themselves to grain.

THE PRESIDENT.—I introduced this paper for the purpose of getting a resolution from this meeting on the subject of the sparrow. I would like, if the members see fit, to have a resolution passed for the purpose of presentation to the Local Government of Ontario at Toronto, so that we may secure legislation. I think we should have legislation concerning the Dominion, and I think we shall before very long, for people are beginning to see into the tricks of this little bird.

Moved by W. Saunders, seconded by A. M. Smith ;

Resolved, that this Association desires, through its officers, to approach the Legislature of the Province of Ontario, and request that immediate steps be taken to so modify the law protecting birds as to permit of the destruction of the English sparrow, including its nests, eggs and young ; and further, for the protection of the great northern shrike, the sparrow hawk and the screech owl, which feed largely on the sparrow.

JUDGING OF FRUIT AT FAIRS.

The Judging of Fruit at Fairs being the next subject on the programme for discussion, was introduced as follows :

THE PRESIDENT.—The subject before the meeting is the judging of fruit at fairs, and was suggested by me for the purpose of getting the opinions of as many as possible who had large experience in this matter. It is a matter in regard to which I think it is time we had come to some definite conclusion ; fruit growing has now reached a point, and the history of our exhibitions has reached a stage, when we ought to proceed with our judging in such a method as will best tend to educate growers up to a higher standard of perfection in growing the different varieties of fruit. It seems to me that in judging, whether plates or collections, at an exhibition, one of the first points is proper nomenclature ; to see that all the varieties are correctly named, and that the fruit competing are what they claim to be. That is the first point I myself look to when comparing one collection with another. I then proceed to look over the different varieties by themselves, as to form and size, looking at the variety on exhibition, and keeping in my mind's eye what perfection in the way of form and size in that particular variety is, and comparing the ideal with the specimen before me. Then, the next point is coloring. If it is a variety to which color is common, I pick out the most perfectly colored samples. I think coloring is a very important point in those varieties of which color is a feature. Then I look at the flavor, and in this respect a difference is frequently found in different specimens of

the same variety ; and in that connection there arises a point which, in an exhibition of that kind, ought probably to be taken into consideration—the circumstances under which the fruit was grown, locality, etc. ; where there is another of the same grown under very favorable circumstances. At some exhibitions it is difficult to do that ; the information is not on the plate before you. At some of the larger ones, however, they give that information upon the entry ticket, and you can judge pretty much by that as to what the soil, climate, and possibly the state of cultivation in that particular section may be. Then I look at the hardiness of the variety—whether it is a variety that can only be grown within a more narrow limit, or whether it is one that can be more widely grown, possibly in the whole Province, and the points of excellence will be counted on that variety in proportion to the extent of country in which it can be grown, and the circumstances under which it was grown. Then, productiveness should be taken into account, I think, in judging each of these varieties. Then the shipping quality comes into consideration ; when we want to get at the intrinsic value of each variety of any particular fruit, we want to know its shipping quality, because we have now arrived at a time in this Province, as in all other fruit-growing sections, when we grow fruit for shipping purposes. Then the keeping quality comes in with the shipping quality ; that, of course, is an important point—the length of time it will keep and hold its best quality. Then, finally, I consider its general commercial value, taking into consideration the different markets and the distance that fruit can be shipped to market where there is a demand for it. The general points of excellence in that fruit combined will rule the point of commercial value. Now, in judging collections, we scale the collections ; that is, we take each plate or each variety in the collection and adopt a scale of one to twelve, or one to five ; five would be perfection in the best possible variety. Then there may be a variety that is the best possible in some particular section, but it has not got enough points to qualify it for the number of five points ; its highest point compared on that scale would only be three or four. I have often thought that possibly it would be better to adopt a higher scale than five, because we find there is a good deal of difficulty in pointing the different varieties, so many points have to be taken into consideration so as to arrive at a perfect variety containing just the number of points. Now, we have arrived at a time in this country when we must look at these points scientifically, and in that way assist in educating growers up to a higher scale of excellence. If we do not improve upon the system generally in vogue and adopt regular rules at these exhibitions the good that is intended to be done to fruit growers by bringing them into competition with each other at such exhibitions, is considerably diminished, if not altogether prevented ; but if a proper system is adopted in each, especially at our leading exhibitions, the good will be something considerable, and the educational objects of such competitions will be attained.

Mr. CASTON.—This is a very important matter ; we have been listening to probably the best authority on apples in Ontario. I have had a good deal to do with fairs myself, and have experienced considerable disappointment on account of the wrong naming of fruit, and on account of judges not knowing their business.

Mr. MURRAY PETTIT.—I am of opinion that the one judge system would be an improvement, for this reason, that where one judge is appointed he would be on the particular variety of fruit of which he makes a specialty, and with which he is thoroughly acquainted, and knowing that all the responsibility rested on him alone, and that he could not shelter himself behind the others, he would use his best endeavors to give a correct judgment. When two or three judges are appointed on different varieties of fruit, as a rule the judging is done by one in each particular variety of fruit, who makes a specialty of that variety ; in that way it is principally left to one individual. But at the same time the responsibility is not all upon that individual. Where a man makes a specialty of some particular line for several years his judgment certainly ought to carry weight over that of some other man who, on account of being a correct judge in some other class of fruit, is putting his judgment in opposition to his.

Mr. BRODIE.—At our Montreal exhibit we generally have a committee to precede the judges and name the fruit that are misnamed, and I may say that if we did not do that it would be a good thing to have the rules and regulations read out to the judges before they go around judging, for very often they do not take the trouble to read up the rules.

The PRESIDENT.—I certainly believe the point raised by Mr. Pettit is worthy of consideration. I have acted alone as judge in a number of instances in the past few years, and I must say that in judging a general collection of fruit or any special line I much prefer to be alone nine times out of ten. I prefer that the responsibility should be all my own, and if I know my subject I do not shirk that responsibility, but would be prepared, if called upon, to give a reason if there are eight or ten collections, why I placed the first prize on that collection and only second or third on the other; I am ready to show where the difference lies. In apples, you know, it is necessary to have a large amount of the fruit, winter varieties, if you want to get a high commercial value. On points of excellence, too, you are going to score more by putting in winter varieties than by putting in summer or fall varieties, but, on the other hand, the points will go against you if you go entirely into winter varieties; because I cannot give the prize to that collection in that way, because, if I do, people will say, "Here is the first prize, I will plant an orchard of that." Now, I cannot advise them to do this; the collection to be perfect to my mind must contain the variety covering the longest possible season, and the variety covering the points of a cooking and dessert apple, combining them. And there, by-the-bye, is a very excellent point in favor of our apples as compared with the British apples; theirs are either dessert or cooking; ours combine to a very great extent both cooking and dessert excellencies. This is a very great advantage.

Professor SAUNDERS.—I think there is something faulty in the wording of our agricultural prize list which makes judges doubtful. In acting occasionally as a judge of fruit I have found difficulties in this way: Some will award the prize to a plate of apples which are perhaps under medium size on account of their color, while other specimens almost equal in color, and considerably larger, will be overlooked by such judges. Others again, will fix upon the largest samples, and the prize lists are worded in such an indefinite way that they do not know what to do. There is not enough definiteness in the prize lists to guide either the judges or the exhibitors.

Mr. HAMILTON.—In Montreal the difficulty has been to what specimens to give the prize. Two or three years ago the judges would have given the prize to a plate of very large apples, while I thought it better to give it to those of medium size, well colored, and showing more of the features of their variety than the larger ones had. The difficulty was that the wording of the schedule was, "For the best dozen or twenty varieties," and there was nothing to guide us as to whether we should give the prize to the largest and finest specimens, or to those which approached most closely in all particulars to what those varieties ought to be. We have always been particular in seeing that they are properly named, and throw them out if they are not.

The PRESIDENT.—I noticed some years ago that the Agriculture and Arts Association had a rule against ringing grapes; we frequently used to put that rule in force. Now, last year I was at an exhibition where there were quite a number of grapes that were thoroughly ringed. When you come to test them on quality, the flavor is evident at once; they have not the natural flavor at all. I do not know whether the Association have discarded that rule or not, but I think it is a good one, because, although it may be all very well for an individual who wants to bring in a few grapes a little earlier for private use, it is not a fair way to grow them for exhibition, and in judging grapes it should be borne in mind that the object is to encourage the general cultivation for profit. Now, no one can tell us that it is going to benefit the country or assist the grapegrowers of this country to instruct them in methods of ringing grapes for the purpose of growing for the market; it never would pay.

Mr. BUCKE.—I was a judge of grapes last year at the exhibition, and there were some gentlemen from Hamilton who exhibited grapes; I said they were ringed, and they admitted it, but they said it was a general thing in Hamilton, and they thought it was an advantage; and as the class was left out of the prize list, I believe these grapes took the prize.

Mr. A. H. PETTIT.—How would it do to furnish printed slips or cards to the judges for them to fill out, giving the scale of points, color, size, quality, etc., and have the judges fill out those forms and have them on the plates, to show to the public in what way they had judged the variety.

The PRESIDENT.—It is a good idea if you can get the societies to do it, but it is difficult to get them to approach it.

Mr. PETTIT.—In regard to ringing grapes, I may say for the benefit of those growing the Champion for home use in the colder sections, that it does improve them; it is the only one I know that it does improve; it is a much sweeter and better grape by being ringed.

Mr. CASTON.—I think that in offering prizes for certain varieties they should be offered for a bushel or half-bushel, or perhaps even a barrel. When it is for half a dozen, a man will scour the neighborhood to get that half-dozen together, which is no evidence of what he has produced. I think it would be far better to have it a bushel or half a barrel, or something like that, in the same way they exhibit potatoes. In regard to collections, I think in most cases at county fairs it is quite an advantage. If there is a prize for a collection of fall apples, one for a collection of winter apples, and another for early apples, and then another one for a collection of fruit, and if each is governed by the rules laid down I think they would have no difficulty in coming to a conclusion. Of course there is another point, about the naming of specimens; people innocently put wrong names on their samples, and they are thrown out altogether. I think Mr. Brodie's suggestion is a good one in this connection—that a committee should precede the judges for the purpose of attending to this; a committee of men who thoroughly understand their business.

Professor SAUNDERS.—I think there is a practical difficulty in the way of Mr. Caston's first suggestion as to having a barrel or half-barrel of apples. The judges would have to go over them and take points on each apple, and it would take altogether too long, and judges are worked too hard as it is; it often takes them two days to go through even under the present arrangement. There is no doubt the idea has some recommendations, but I am afraid it is not practicable.

The PRESIDENT.—Another very important point, which should be insisted upon, is that the specimens should be perfect ones. Now, an apple is not perfect unless the stem is there, and a pear or plum must have the stem there. I have known parties to exhibit the same plum as being two varieties by simply removing the stem; they would show one plate without the stem as a different variety. I saw it this last fall—I saw the Urbaniste exhibited as Lawrence, and it took the first prize. I therefore look upon it as a very particular point to have the fruit complete and perfect. I have seen the same kind of thing done with grapes; that is where there are two shoulders, to remove one of them. In judging bunches it is important to see that the whole bunch is there as grown. I know there are some varieties it is difficult to do that with, but I have seen so much of this kind of thing that I think it is highly important that the associations should insist upon every point connected with the fruit being present.

Mr. SMITH.—Reference has been made to parties who scour the country for fruit to exhibit. I know a man who has taken several prizes during the last season, some in Toronto, I think, and in London he took the first prize for the best collection of forty or fifty varieties, and to my own knowledge he has only one apple tree on his place.

BEST GOOSEBERRIES FOR THE COUNTY OF CARLETON.

The meeting then proceeded to the consideration of the above subject, the discussion of which was opened as follows :

Mr. GREENFIELD (Ottawa).—I have found the Houghton, a gooseberry introduced by this Association, a very good one; it is an excellent bearer, never mildews, and the severest winter never make any difference to it. Like all the rest of fruits, however, it has a fault, but if you keep it well trimmed and give it rich soil you will find it repays you for the trouble. It is preferred to the Downing here on account of its color. Then the Association afterwards introduced the Downing, which I found a great deal larger

and better berry. It is a very strong grower and heavy bearer, and I have never found that the winter is too cold, neither for the bush nor the fruit, and yet, like the rest, it has a fault too. But if you can plant it so as to shelter it from the mid-day sun it will do a great deal better, for if the rays of the mid-day sun get at it you will often find that it parboils the berries, so to speak, and they fall off. If you plant it on the north side of a tree, however, you will find it one of the best berries we have in this locality. One thing which makes it very valuable is that it will hang on the tree a long time after it is ripe without injury. I have taken as many as three gallons from one bush which was seven years old, but the average run of the bushes is from a gallon to a gallon and a half after they get about four years old; but you must keep them clean and well trimmed. Smith's Improved came to us after the Downing, but I find the bush is rather tender—not as hardy as the Downing. The berry is better and a little larger, but it will not stand shipping; I don't find it anything like as valuable as the Downing, and it is more tender. I have tried many others, but find none of them hardy enough to stand this climate, but the three I have mentioned are well worth planting by anyone who wants gooseberries.

Mr. BRODIE.—Have you tried the Whitesmith?

Mr. GREENFIELD.—Not yet—not to try it; but I have heard a good deal about it. I have had several English gooseberries, but they all mildewed except one, and this season it had some very fine berries, but not many of them. I had it planted on the north side of a tree so it would be sheltered from the sun, and if you want to rear good gooseberries here you must protect them from the mid-day sun which, if it does not parboil them as I have already described, takes away their flavor; they haven't the same flavor as when kept in the shade.

Mr. WHYTE (Ottawa).—I have had some experience with gooseberries, and although I never saw such beauties as in Mr. Greenfield's garden last summer, I cannot agree with what he says about shade, and I have tried it in every way too. Three years ago I planted a number of gooseberries and one end of the row ran down under an apple tree, and there was no crop; there is no crop unless they are in the sun. I have noticed to a small extent that the sun parboils them when exposed to its direct rays, but a properly trained bush should be in such a position that it does not affect many. It seems to me that Smith's Improved is superior to all others for quality. There is nothing I like so well as gooseberries, and Smith's Improved is beyond comparison better than the others. There is another young berry I have tried, which has not been disseminated all over Canada; it is grown by Mr. Conn of Kemptville. It grew last summer about an inch and three-quarters in length, and it is of very fair quality. I would not say it is as good as Smith's Improved, but it is very good, and perfectly hardy; I think it will be the coming gooseberry. I had a very nice crop of Whitesmiths two years ago, but since then it has been going down. As long as I can grow Smith's Improved I do not think it worth while bothering much with the others.

Mr. BRODIE (Montreal).—My soil is not very well suited to gooseberries to grow them to perfection, but the Whitesmith with us is the kind most grown for market. There is a gentleman down near Hochelaga who has grown something like two thousand gallons off a small piece of ground—

A MEMBER.—In how long?

Mr. BRODIE.—He has been for years at that business. He has just about four acres of ground, and he has got plum trees and gooseberries. I have had a good deal of trouble by the sun scalding them in the manner described by Mr. Greenfield.

Mr. BUCKE (Ottawa).—I believe I am responsible for the introduction of the King Conn, as we call it. Mr. Conn, of Kemptville, got it somewhere, but does not know exactly where. I do not know what its origin is, but it is certainly by all odds the finest gooseberry grown in Canada; there is no comparison at all between it and any other. It is perfectly free from mildew, and the bush is a fine grower in every way. I have had the Houghton, Smith's Improved and the Downing, but none of them can compare with the Conn. Mr. Conn has had an offer of \$150 from a grower up west for the sale of plants.

Mr. MATHEWSON.—I have been growing gooseberries thirty years. I did at one time attempt to grow some of the English varieties; the Whitesmith did fairly well the first year, but after that it failed me; all the other English varieties introduced were failures. I attribute that to some extent to the lightness and dryness of the soil and climate. I think myself, that gooseberries require a great deal of moisture applied at the roots.

Mr. GIBB (Abbotsford, P.Q.).—If I am not mistaken, in that garden referred to by Mr. Brodie, these berries were grown for about twenty-six years. One year they did mildew, but the next year they did not, and have not since. Further down the river, on clay, several others have been growing gooseberries, that is, the Whitesmith and Crown Bob, with good success.

Mr. BRODIE.—I may say that just behind the mountain a few miles they cannot grow these varieties, but along the river front seems to be a favorable locality.

Mr. A. M. SMITH.—I would suggest to the members living in this locality the advisability of keeping an eye on the Experimental Farm. I think Professor Saunders has a collection of seedlings which will prove valuable in this locality. I fruited some at St. Catharines which I considered superior to the Downing, and there will be a good chance for you to examine them and make a selection.

The PRESIDENT.—Those who were present at our last meeting in the city of Stratford will remember that the Crown Bob and other English varieties are grown to perfection there; they don't seem to have any trouble with mildew at all there, but further west, where I reside, we cannot grow these English gooseberries. I have tested most of them, but have invariably lost them through mildew; the bushes would grow all right, but I could never get any fruit worth anything off them.

After the passage of a resolution thanking the municipal authorities of Ottawa for the use of the Council chamber, the President declared the meeting adjourned *sine die*.

THE SUMMER MEETING.

The Summer Meeting was held in the Shire Hall, at Picton, on Wednesday, July 11, beginning at ten o'clock.

President Allan opened the meeting with words of greeting to those who had attended. The subjects on the programme were all so interesting that he scarcely knew what topic to take up first. Several questions would have to be laid over till the arrival of other gentlemen. Meantime, he would call upon the Secretary to read a paper on "The Farmer's Fruit Garden."

THE FARMER'S FRUIT GARDEN.

The following paper was contributed by the Secretary :

Every farmer does not want to engage in fruit culture for profit. Tastes differ. Some prefer stock breeding ; some, grain growing ; some, dairying ; while still another class are enamored with fruit growing, and prefer it to any other occupation. It is wisely so arranged, else, if all chose to grow one thing, all would be in poverty.

But every farmer does need to have a well-stocked fruit garden for home use, and this is what I want to impress upon all present. Evidences do not appear to favor my statement. It is the exception to meet with a well-stocked garden in country places, except for market purposes. Its importance is not appreciated. The farmer's table is often more scant in its supply of fruit in variety than is the table of the citizen who depends upon the market and must pay cash for it. Now, I maintain that this is a great mistake.

I am aware that the idea is gaining ground that in this age of specialties it does not pay to attempt anything out of one's line ; that the farmer should devote his whole time and thought to grain and cattle, and the fruit grower to his fruit ; that the farmer would make a mistake in growing strawberries, because the time and labor spent on them would, if devoted to his potato patch, produce more than would purchase all the strawberries, and *vice versa*. Now, I believe this principle is a sensible one, and I advocate it heartily, but we are not ripe for it yet. The fact is the farmer will not buy fruit for his table, to any extent. He can live without it, and unless he grows it on his own farm he goes without it and his family must do the same. It reminds me of a story I read of a farmer who was at a hotel for dinner. There was some excellent cheese upon the table, and he helped himself several times, evidently enjoying it very much. A gentleman observing him said, " You do not get good cheese down your way." " Yes," he replied, " they keep it at the grocer's, but as we do not make cheese, we do not have it on the table one week out of fifty-two." And yet this man lived in a \$5,000 house, and had plenty of means. So, then, the surest way to ensure the abundant supply of the tables of our farmers with the various fruits of the season is to encourage them in its cultivation.

If merely as a *luxury*, it would be worth all the trouble and expense it costs to grow the various kinds of fruit that are most desirable for home use. Not to speak of apples, raw or roasted, in sauce, or in pies or in dumplings, how delicious are cherry, blackberry and gooseberry pies, raspberry jams or plum preserves ! And what is more palatable for dessert than a well-ripened, luscious Bartlett or Duchess pear ? And why should not the most delicious pears be found upon the farmer's table from August to April of every year, when varieties may be planted whose fruit will ripen for use in each of those months as in each intervening one.

But I urge the claims of the fruit garden for *health's sake* also. It is well known that that most dread disease among sailors, the hateful scurvy, is induced by feeding upon salt meat for a length of time without the counteracting influences of fruit or vegetables. Dr. Allinson, of London, Eng., says that fruit carries away injurious mineral matters which tend to accumulate in the system, and that a mixture of fruit and grain is the best possible diet.

A writer in the Nebraska *Horticulturist* speaks in the following suitable terms concerning the use of currants for health :

"I shall not lay stress on the old, well-known uses to which this fruit is put, but I do think its value is but half appreciated. People rush around in July in search of health ; let me recommend the currant cure. If any one is languid, depressed in spirits, inclined to headaches and generally 'out of sorts,' let him finish his breakfast daily for a month with a dish of freshly-picked currants. He will soon almost doubt his own identity, and may even think that he is becoming a good man. He will be more gallant to his wife, kinder to his children, friendlier to his neighbors, and more open-handed to every good cause."

Miss J. Power, in the English *Horticultural Times*, is well supported by the best authorities in saying that grape juice is the finest medicine for correcting a feverish, bilious state ever known. It has the hypophosphites which doctors prescribe for wastes of tissue, and taken freely will arrest even critical stages of disease. People, she adds, fed on pure food, with abundance of fruit, need never dread cancer, Bright's disease, gout, neuralgia, dropsy, or a dozen other of the worst scourges of our race.

I think I am making a strong point in favor of the farmer's fruit garden in thus emphasizing what is an acknowledged principle among medical men, that the acids of fruits are of the utmost importance, for the medicinal virtues, to the human system. Dr. Allinson even admitted that a diet of fruit and vegetables would go far toward dispensing with the services of the physician. If, then, the fruit garden may be the means of preventing much of the sickness in our homes, how soon will it pay financially even in the saving of doctors' bills ?

The experience of a great many stockbreeders goes to prove that it pays to grow apples for stocks as well as to grow roots. Prof. L. B. Arnold writes the following to the *New York Tribune* :

The feeding value of apples is not large ; they rank with mangels, turnips, cabbage, and the like. Their food properties are mostly carbo-hydrates, or heat producing, their protein being only about one-half of one per cent., and their nutritive ratio about one to thirty, and hence are most effective when fed in connection with more nitrogenous food, like clover, but may be fed sparingly with grass. They have a higher value than the weight of their food constituents indicates, on account of condimental qualities, and from having a larger per cent. of those constituents in a condition to be at once absorbed and appropriated without waiting for any special action of the stomach. Using hay as the unit of measure, apples compare with it and other common feeding stuffs as follows, per 100 pounds of each :—

Hay.....	\$0 50	Cabbage.....	17
Cornmeal.....	1 12	Apples, ripe.....	16
Oatmeal, bran and middlings.....	1 00	Turnips.....	16
Potatoes.....	29	Rutabagas.....	15
Sugar beets.....	19	Mangels.....	14
Parsnips and carrots.....	18	Pears	13

Good ripe apples have a feeding value of not less than eight cents per bushel of 50 pounds, and are as good for other stock as for milch cows. For any one who has stock to consume them, it is as much of a loss to waste good apples as to waste good roots. When fed with reason and appropriate food they are health-inspiring as well as nutritious, and are only injurious when fed immoderately. An experiment in feeding three cows with moderately sour apples, ripe and mellow, for several weeks, at the rate of 12 to 20 pounds to each cow daily, gave me a finer flavored butter than I ever saw from grain or grass. I have known others to feed them in larger quantity and for a longer time with satisfactory result, and their butter to be not only fine flavored, but to have remarkable keeping quality, and the stock to remain perfectly healthy. I have also proved them to make excellent milk for cheese. The managers of cheese factories have noticed an improvement and increase of milk when their cows have been fed moderately with apples.

Prof. L. B. Arnold, whose decease at Rochester was announced 9th March, 1888, was one of the best American authorities on dairying, and his work on *American Dairying*, published in the year 1876, is a standing proof of the assertion.

Do I need to emphasize the importance of the farmer's garden any farther. Need I refer to the proceeds in dollars and cents ? Will any one dispute the statement that, aside from considerations thus far presented, the highly cultivated acre of garden pays better, financially, than any other acre of ground upon the place, even if no part of the crop ever goes to the market ?

My next purpose is to show how to make such a garden yield the best possible return. I will speak first of the small fruit garden, and secondly of the large fruit garden or orchard.

For an ordinary family, from one-third to one-half an acre of ground will be sufficient. Let it be the very choicest on the farm, and, if possible, near the house at the side or rear. Of course it must be safe from cows, pigs, sheep, fowl, etc., but if in the situation described it will be a portion of the house yard, and so need no separate fence, but only be screened from the lawn by a hedge of arbor vitae, privet or ornamental shrubs and roses. No pains must be spared to have the ground in the best possible condition, else of course there will be a waste of time and money. I mean it must be well drained and well manured. I do not mean a thin top dressing of manure, but heavily coated with good manure, at the rate of say thirty or forty loads to the acre, unless the soil is already better than that of most farms I know of.

In shape it should be longer than broad, admitting of rows at least two hundred feet in length, for convenience in cultivation with the horse. The time is gone by for doing with the spade and hoe what can be so much more quickly done with a horse, little plough, and cultivator.

Now for the kinds of fruit to plant and the number of each for the home garden. We want a succession. We want our tables furnished with fresh small fruit all summer. Then we will begin with strawberries, which in this district begin ripening in June. Planting them one foot apart in the rows, 200 plants would be required for each row, and three or four rows three feet apart would not furnish too large a quantity of this, the first and one of the most luscious fruits of the season. For varieties we would suggest Crescent, Wilson, Sharpless and Manchester, in about equal quantities. For best results constant cultivation should be given the strawberry right through the season, and a mulching of straw or coarse manure should be applied before the time of freezing nights and thawing days of early spring. All runners should be kept cut off after the ground is once sufficiently covered with plants.

Raspberries follow closely upon the heels of the strawberry, and are almost equally delicious in their three colours of black, red and yellow. To our taste black caps are the most desirable for canning and for pies, and the red for preserves and for jam, while some varieties of the yellow are beyond comparison for eating fresh. They may be planted about three feet apart, in rows six feet apart. A half row of each variety suggested would be a sufficient quantity. In black caps I would suggest Doolittle or Souhegan for early, and Mammoth Cluster and Gregg for late. These need to be on soil that does not dry out, crack, or bake, else the fruit will dry up in the hot July sun. A deep, rich sandy loam is best, and this kept well cultivated and stirred up, even during fruiting season, unless the weather is wet. The pruning shears should be freely used to keep the canes within bounds, unless it is necessary to layer the tips for propagation. The old canes may be removed and burned either in the autumn or in early spring, and only four or five new canes be permitted to grow in each stool. In the planting of these and of the other plants, a stout garden line is of course indispensable. In red raspberries I would recommend Highland Hardy and Marlboro' for early, Turner for medium, and Cuthbert for late, and these will extend over a period of about six weeks. Last year my raspberries began with the 16th June and ended about the first of August. In white raspberries, the best varieties are Brinckles' Orange and Golden Queen. This year the first were not ready until July 6th.

Currants and gooseberries will also come during the months of June and July, and no one need be discouraged about growing these fruits, because of the currant worm, when an occasional sprinkling with hellebore and water, in the proportion of an ounce to a pailful, will so easily keep them in check. One row of currants and gooseberries, planted about three feet apart, in rows six feet apart, would perhaps suffice. In kinds I would recommend the following currants, viz., red, the Cherry and Fays; white, the White Grape; black, Black Naples and Lee's prolific. In gooseberries, I know of none so reliable as Smith, Downing and Industry. The latter, however, is said to mildew in some locations.

The currant bush needs to have the new growth cut back early every spring, one-half, and kept somewhat thinned out, while the gooseberry needs only the annual thinning out of old wood. There is a great satisfaction in a row of bushes thus kept in good shape and well cultivated, but if neglected they are neither useful nor ornamental.

Heavier soil may be used for the currant and the gooseberry than for the raspberry. Indeed, in my experience, the Cherry Currant bears much more freely on clayey loam than upon sandy loam.

The large blackberry comes next in order, and is a most valuable substitute for peaches for table use in the month of August, when peaches fail. If properly ripened the blackberry makes an excellent sauce for the table, being just acid enough to suit many people's taste; and for pies it is not excelled in the writer's estimation by even the Kentish Cherry. One row of these will suffice, and the following kinds will be suitable for the Niagara District, viz., the Early Harvest, the Kittatinny, and the Taylor. I add the latter because it is more hardy than the others, and will often produce a crop when the others might fail on account of the severity of the season. For convenience in cultivation it will be necessary to cut back the canes at a height of two and a half or three feet in the summer. By this means they may be made to stand firmly upright without support, and there will be no sprawling canes to obstruct passage between the rows.

I will close this first part of my subject with some references to the grape. This can be planted in many places, otherwise waste. It may be trained along the side of a building, or upon a fence that is intended to screen unsightly objects. It is an ornamental vine along the side of a back verandah, or trained to cover an arbor in the corner of the garden, or retired part of the lawn. Or it may be trained upon a trellis in rows.

Grapes should be planted about ten feet apart, in rows about the same distance. Thirty or forty vines of several of the best varieties of each color, will not come amiss. The time of grapes for family use can be extended over a very long season, by packing away such varieties as Salem, or Vergennes, which can be kept until spring. Thus, for at least six months of the year, the medicinal and agreeable virtues of fresh grapes may be utilized in the family. In varieties I would recommend the following, viz., red, Delaware, Lindley and Brighton; black, Moore's, Worden and Wilder; white, Lady, Jessica and Niagara. To these I would add Salem and Vergennes for their keeping qualities, although the former is much subject to the mildew.

Too much barn manure is not best for the grape. A surplus of nitrogen produces too much wood growth at the expense of the fruit. Phosphates and potash are specific manures for the vine; the former is found in bone meal, or in the mineral apatite which is now being so extensively worked in the vicinity of Ottawa, while the latter is a constituent part of wood ashes.

I have thus given a general view of what should, in my opinion, constitute the farmer's small fruit garden. Such a garden will yield him more pleasure and profit than any other equal portion of the farm, not excepting the orchard, which I shall have to leave over to be treated of on another occasion. I hope that these few hints may help to increase the general interest in the home garden, and result in the more abundant supply of fruit for the farmer's family, and in the freer use of the same in all our county homes.

The President called for a discussion on the paper.

Mr. WELLINGTON BOULTER, Picton, said:—It seems strange to me that in this age of improvement there should be any necessity to impress upon the minds of the farmers the necessity of endeavoring to grow something to make their homes pleasant and comfortable. Many of the farmers even in this county, I am sorry to say, have very little to eat upon their tables except what they grow in the way of grain and beef and pork. When they can be cultivated so easily, and add so much comfort to the living of the house, it seems strange that any man for a moment should forego the little time and expense necessary for the cultivation of strawberries, raspberries, plums, grapes, etc. I welcome the Fruit

Growers' Association to this county. I trust that their visit will be profitable to this county, and that those members who have spent the time in coming to Picton will feel pleased that this place was selected. Sorry am I that we have suffered what we have with the unfortunate drouth, because the county does not show off to that advantage that we Prince Edward county people are proud to acknowledge it usually has; but as the elements are governed by a higher and wiser power we cannot complain. I trust the farmers will come in and say something on these subjects, and interest themselves in it. I hope a stimulus will be given to many in this locality to go more into fruit in the future.

Mr. P. C. DEMPSEY.—In riding over the county I saw a man with a superior 100 acre farm that \$7,000 would not buy, and he failed to have an orchard on it. He could draw his whole crop this year, including hay, on one waggon load. If he had had currants or strawberries he would have had something worth while.

QUESTION DRAWER.

The question was asked, In what state and where does the Rose-leaf Hopper pass the winter?

Mr. MITCHELL, of Innerkip, replied:—The question was asked by myself. A discussion took place on the matter some years ago, and even entomologists disagreed with me as to where this insect does pass the winter; and does not seem to be settled or understood. I wish to bring it up on that account, because I consider it would be more easily managed if we understood it. Although not an entomologist I hold that the insect passes the winter in a larvæ state in the bark of the rose itself. Leading writers have disagreed with me, but I think it will be found that I am correct in the matter; and I hold that it is a great thing to understand the habits of the insect so as to get at them. I think any one studying the matter even with the naked eye will discern them coming through the bark of the rose just at the time the leaves are expanding. I wrote Mr. Saunders, and he informed me that he had never taken the matter up so as to study with any certainty on it. I also wrote a number of our rose-growers—those who had investigated among the rose—Mr. Webster, of Hamilton, who agreed with me. It was brought out originally by an article of mine in the *Canadian Horticulturist*, where I was criticised. I did not know that I was making any new discovery, but I just mentioned where it did pass the winter, and it was criticised; but if there is an entomologist present here, or any one that has investigated the matter, I would like to hear from them. To rose growers it is quite an important matter.

The SECRETARY.—I am only an amateur entomologist, and therefore cannot answer from the entomologist's standpoint. I find that Mr. Packard, in his "Guide to Insects," states that the Grapevine-leaf Hopper, which is somewhat similar, passes the winter in a perfect state under dead leaves, etc., and that very early in the spring the perfect insect deposits its eggs in the young leaves, which very soon develop into the young larvæ, and at once proceed to extract the juices from the leaves. I suppose that the Rose-leaf Hopper would pass the winter in the same way, and perhaps very early in the spring deposit the eggs in the bark, from which the practical rose-grower would observe the young larvæ issuing, and would naturally suppose they had spent the winter in that place.

FRUIT GROWING IN THE COUNTY OF PRINCE EDWARD.

Mr. Williams read the paper on this subject as follows :—

The progress that has been made in Prince Edward County since 1848, when I made my first selection and purchase of fruit trees, has been great. At this time our grafted fruit was very limited ; the recommendation to any fruit was that it was a graft, therefore the people should not question. Our tables were very scantily supplied, even among the fruit growers themselves. The natural seedling was eagerly sought from long distances for drying purposes for home use, and brought from 10 to 20 cents per bushel, while our larger markets were chiefly supplied from over the border. My first shipment of apples was to Ottawa, or Bytown, in 1846, by the old Rideau Canal, from Kingston, and took up nearly as much time as now in going to London, and was then a greater wonderment. They brought from \$3 to \$4 per bbl. This sum seemed immense compared with what was generally realized at home. The first trees were purchased from a Mr. McGill, from a place called the Gallows, on the American side. Parties taking a dozen trees thought they were making a large purchase. The old varieties were Gloria Mundi, Pound Sweet, Red and Black Jilly-flowers, Flushing and Esopus Spitzenergs, Golden Russett and Pinnock, which trees are still alive and bearing fruit. The result of the shipment was that where our apples came into competition with the American fruit we were equal if not ahead. This gave the impetus and courage to cut away the naturals and retop with the best we knew of. This method produced quick and satisfactory results, which fact gave a lively interest to the cultivator. From 1860 to 1870 there was a mania for planting fruit trees, from the small garden to larger areas, and in a very short time thousands of barrels were shipped to foreign markets. Fears were entertained that as the volume grew so rapidly that foreign markets would soon be over-supplied, and the same fear is in many minds to-day, as the markets are educated to appreciate the finest kinds of fruit, which supercedes or gives a large class of inferior fruit the "go by," that at one time commanded good prices and a ready sale. The best grades are now confined chiefly to few varieties, making it as important now to top-graft as with the old naturals of the past. The fruit growers have not been exempt in this county from disappointment, if they *have in others*. In ordering trees many have proved untrue to name when coming into bearing. Excuse me if I state here that I gave a nurseryman an order for 150 Ribston Pippin trees, stating I wanted to plant them myself. I could only trust fifty on sight, and in that fifty I had six different kinds of apples and only fifteen trees were true. Notwithstanding many drawbacks the cultivators have continued to battle along, and have achieved a grand success. The past year was very dry and adverse to the fruit interests of many in different parts of the county, yet the yield or volume of trade in fruits was very large, amounting to tens of thousands of barrels, of which your humble servant put up of his own growing over 1,100 barrels, a portion of which was shipped to London, as in the previous twenty-seven years, realizing over \$3 per barrel. The soil preferable is strong loam, fit for a good corn field or garden. After planting out thirty feet each way cultivate and manure for five years with hoed crops, then cultivate yearly and sow to oats for pasture for sheep and pigs, but take nothing from the soil in the shape of grain crops. The varieties cultivated of the apple are over 120, viz. : 20 summer, 34 autumn, and 66 winter. Our shows have given so many premiums on different kinds of fruit bad results have followed. Trees have been planted largely for exhibition purposes ; as the trees grew up there is a large variety that is not wanted for shipping. Parties formerly in ordering trees were not satisfied if they could not get thirty to forty kinds to the hundred trees. From the 120 varieties I would select twelve for shipping purposes : Duchess, Chenango, Twenty-ounce apple, Colvert, Maiden's Blush, Jeffries' Winter Golden Russett, Northern Spy, Vermont Pippin, Baldwin, King Tom, Rhode Island Greening. Add five more for home use, viz. : Primate, Wagener, Smoke House, Green Sweet, Tolman Sweet. This will give a continuous supply and is suitable for both market and home.

PEARS.

There is no money in growing pears, in comparison with apples. I have often said when asked "will pears pay?" my answer was I could make more money with apples at 25 cents per bushel than with pears at \$2. I have had no reason yet to change my assertion; they have not awakened the same interest, being short lived—having to be replaced often—not so much from the blight as from the severe climatic changes from heat to cold in the winter and spring months. I have tested over fifty sorts. In growing the tender sorts I succeed by far the best in growing the Flemish Beauty, and top-grafting. Out of these I would name ten varieties that have proved to be the best: Doyenne de Ete and Madeleine for early, Clapp's Favorite, Bartlett, Belle Lucrative, Tyson, Doyenne Boussock, Flemish Beauty and Beurre de Anjou for fall, and Josephine for winter.

CHERRIES.

In cherries there is nothing doing. There are a few old trees of the very old stock left here and there that thrive and do well. The cultivated varieties burst their bark and die. This is caused by warm open weather in the winter months followed by zero weather. I am fearful if the Russians that are introduced at present can withstand these changes.

Aside from the apple, the grape, I think, in the near future will have the second important place both at home and market. It is beyond question that the grape can be had in abundance through the whole of the winter months fresh on the bunches. I had them for the last two years up to June 1st, and up to April as fine as when first taken from the vines that were grown in the open ground. Grape culture as a whole throughout the county is but in its infancy. There are a few persons that are succeeding admirably, though with but few varieties on very small areas. The interest is growing and will be like leaven, soon to make rapid strides. One great hindrance has been so many poor grapes forced on the market as superior to all predecessors, and when proved not fit to be retained in cultivation. I would name a few that have succeeded best in this locality: Jessica only for early, Brighton, Delaware, Early Dawn, Rogers' 3, 4, 9, 22, 44. I am speaking now of grapes for the household exclusively; were they wanted for marketing then I would in all probability add a few to my list.

The soil generally throughout the county is well adapted for growing currants and gooseberries in great abundance. There are four kinds in cultivation, the White Grape, Raby Castle, Cherry and Fays. If I could choose but one for the family I would take Raby Castle, as it has a thick leathery foliage, holding both leaves and fruit till all others are naked and bare, and keeping nicely till September. The Downing is the principal gooseberry, the Houghton and Whitesmith are grown to a small extent only.

There is a lively interest just now in the red raspberry. We have been very backward it taking hold of this fruit. For canning purposes they are preferable to all but the large blackberry, and there has been quite a number cultivated. Cuthbert, Turner, Clarke, Hansell, Philadelphia, etc. I am still holding on to the old Red Antwerp, and think it has not yet been beaten. The blackcaps are being rapidly superceded.

Strawberries are a very good cropper here, on suitable ground where not too dry, and with a fair share of care and attention are profitable to grow for shipping and canning. The new varieties have not been taken hold of very much. Most growers are keeping hold of the old Wilson, Crescent, and Manchester. The James Vick proved worthless.

Take fruit as a whole I would report advancement in every branch as to quality, quantity and profits.

Mr. WRIGHT, (Renfrew).—Does the Raby Castle keep ?

Mr. WILLIAMS.—I have kept it till the 15th September on the vine.

The SECRETARY.—You speak of keeping grapes till June. How do you do it ?

Mr. WILLIAMS.—They are simply taken from the vine and put in small boxes, probably nine inches by two or three inches deep. They are taken to the vine, and the grapes are cut off without handling and laid in and put into a room that is airy, but not covered ; and allow them to be in that cold room until the frost sets in ; then put them in the cellar. They will shrink a little, and the surplus juice appears to be evaporated a little ; and we keep on using them.

The SECRETARY.—Don't you close up the boxes at all ?

Mr. WILLIAMS.—Oh no ; I failed entirely with sawdust or cork or anything I put them in. The best way is to have nothing in them, and not to put them much one upon another nor rub the bloom off.

The SECRETARY.—No leaves with them ?

Mr. WILLIAMS.—No, nothing at all.

The SECRETARY.—What kinds ?

Mr. WILLIAMS.—They were the Rogers. Brighton I kept very nicely till the first of March. The Delaware I could not keep. A good many kinds won't keep, but those I mentioned are very good keepers.

Mr. SMITH.—Have you the Victoria currant ?

Mr. WILLIAMS.—I have had it. It grew small. It did not grow nearly so large and fine as what I have now of the Raby Castle. I was in the cellar to-day, just before I came away, and there are about a thousand boxes of grapes there yet, sweet and clean.

The SECRETARY.—Are they not shrunk or shrivelled ?

Mr. WILLIAMS.—They are shrivelled ; the juice appears to condense.

The PRESIDENT.—Your fall apples you use for local markets ; do you never ship any to foreign markets ?

Mr. WILLIAMS.—I have shipped the Duchess and the Colvert and the Maiden's Blush. The Colvert also ships well.

The PRESIDENT.—The Twenty-ounce you refer to is the Cayuga Red Streak, is it not ?

Mr. WILLIAMS.—Yes.

The PRESIDENT.—The other Twenty-ounce is the highest priced apple on English markets on account of its size.

Mr. A. H. PETTIT.—Why did you discard the Worden grape ?

Mr. WILLIAMS.—They ran all over ; they dropped from the cluster very badly, and the flavour itself I don't like.

The SECRETARY.—You discarded the Concord also.

Mr. WILLIAMS.—Yes ; I have grown the Concord for twenty years, and I have never eaten three bunches in all that time.

Mr. M. PETTIT.—Did I understand you to recommend the Early Dawn for family use ?

Mr. WILLIAMS.—For family use, for keeping.

Mr. MORTON.—I have been trying the Early Dawn, and I don't think it will bear before the day of judgment. I have been working at it now for about six years.

Mr. M. PETTIT.—I can't get from Early Dawn more than two pounds to the vine.

Mr. WILLIAMS.—I get nearly as much as I do from Concord.

Mr. W. BOULTER.—Eight years ago I put out 150 pear trees. I have been a little unfortunate. I would like to see pears cultivated, for we had to go to the other side for them last year. I had very few varieties. I have lost all the winter varieties but one tree. The principal ones I put out were Sheldon, Clapp's Favorite, Flemish Beauty, and a few Osbands. I lost them in the winter of 1884-5. The only trouble with Flemish Beauty and Clapp's Favorite is that the bark on the south-west side is cracked or killed, I suppose by the sudden changes of the weather. We have had pear blight in our orchard now the last three years. I believe that pears can be cultivated successfully, but there must be probably something in the soil that is the cause of so many failing. My land was a clay loam, very fine. I was able to cultivate. My pear trees were fifteen feet apart each way, and I put the raspberries between the rows. I set

out one tree in the corner of the fence, and have been mulching it—throwing ashes and one thing or another, and the scrapings of the barnyard around it. That tree has gone ahead of any other, and has never been effected in any way. The bark is perfect. It bore last year. This year is the first year my pear trees have borne. Have any of you ever tried wrapping the trunk up with straw, or putting up a board to protect the south-west side?

Mr. WRIGHT.—I have. Where the rope touched it was as green as could be, and all the rest black right up. The straw covered it all.

Mr. WILLIAMS.—I have not tried to set a board up. I have wound them around with the hay rope. Rain would get in and wet it, and the thing would slip off in the spring.

Mr. BOULTER.—Have any of you ever washed your pear trees with lime?

Mr. WILLIAMS.—I have not. I frequently do it with apples.

Mr. BOULTER.—I think Flemish Beauties, and Clapp's Favourite, and Sheldons can be cultivated. In 1884-5 I put out seventeen Buerre d' Anjou in a row. They all froze. I can corroborate Mr. Williams in regard to planting trees years ago. My father kept a nursery, and twelve trees was about the greatest number he could sell to a farmer. He generally tried to get him to take two bunches of a dozen each for twenty-five cents.

Mr. WOODROW.—I have just cut down an orchard that did not produce much, and set out strawberries. We picked 20,000 boxes of strawberries off the two acres. We grow strawberries and raspberries principally; strawberries, Crescent and Wilson; raspberries, Cuthbert and Sharpless. I have a few Golden Queen, that is new. (Specimens of these were shown.)

The PRESIDENT.—Do you grow any other fruits?

Mr. WOODROW.—Nothing of any account. I have a few currants and gooseberries. The White Grape currants are the best I ever had, I don't grow White Grape for money; I grow strawberries and raspberries for money.

DELEGATE.—Are those white raspberries (Golden Queen) grown for use?

Mr. WOODROW.—Yes. I have had an experience of two winters; I find them hardier than Cuthbert. I think it is fully equal in productiveness. It lacks a trifle in quality. I don't think it is quite so good.

The SECRETARY.—Have you tried the marketing of the Golden Queen?

Mr. WOODROW.—Not at all. The man I deal with in Kingston says a limited quantity will sell well, and will bring a high price. I set out six or seven hundred plants this spring for test. They are a good growing plant, and they winter well.

Mr. DEMPSEY.—When I heard Mr. Woodrow talk about his Snow apples failing up to two years ago, I know perfectly well that mine failed for a few years, and I have a nice little orchard of Snow apples, too. I felt like cutting them down. I did saw the tops off, but last year's crop excelled anything I ever saw of any variety of apple; and, strange to tell you, those that we took from the trees in good order, and got to market in good order, brought \$4 a barrel. The whole crop averaged us \$3 a barrel. I would ask Mr. Woodrow or anybody else, if with strawberries, taking the same amount of land occupied, and the same term of years, he can get that much. On the same ground I grow my apples I have taken six thousand quarts of strawberries off the acre, and they brought me very remunerative prices. I have also taken from the same acre that I have taken apples, about 50 barrels of apples last year from the acre. I have at the same time taken 200 bushels of potatoes per acre; and, take the whole of it, I must confess it was the most profitable crop I ever grew.

Mr. BOULTER.—Were the Snow apples a little spotted last year?

Mr. DEMPSEY.—There were no spots on them last year. We gathered them from five hundred trees. The year previous they were specky. There are no spots on them now. I am not going to recommend the Snow apple, because if I was going to plant an orchard I would not put out one. We have a lot of Wealthy apples. They are just as pretty on the tree; they bear an enormous crop on the tree, and I have yet to learn of any spot on a tree in the county, although Mr. Croil has had them spotted. Our Wealthies are always clean, and they bring a little more than Snow in the market. I will make more money on our slow-growing Wealthy apples than I

can of strawberries. I differ with Mr. Williams in the collection of apples, because if I were going to plant out a thousand trees to-morrow for profit, they would consist of Wealthy, Duchess of Oldenburg, and Ben Davis, and I would just stop there; and the latter one would produce more money than all the rest, too.

The PRESIDENT.—I suppose what you would keep for your own use for winter, would be Ben Davis altogether. (Laughter.)

Mr. DEMPSEY.—Certainly; but I would just want some juice of lemon squeezed into them, and they would make one of the most delicious sauces you ever got out of an apple. With respect to pears, perhaps I have not had so much experience as Mr. Williams, but I have imported two hundred varieties of pears, and out of that number there are very nearly two hundred failures. (Laughter.) But I feel very thankful that there are a few successes; and that is the only way that we can ascertain whether fruit growing is going to be profitable in the county of Prince Edward or not.

Mr. BOULTER.—Were those the standard pears you planted out or dwarfs?

Mr. DEMPSEY.—They were standards trained very low. Now I am sure we can grow certain varieties of pears very nearly as cheap as we can apples, and with a certainty of success. The pears Mr. Williams mentioned, Doyenne Boussock, we have cultivated that for twenty years, but it is just being boomed now, and the people are beginning to appreciate it. It is not a first-class table pear, but where parties have canned it, they don't want the Bartletts. It is a prettier pear than the Bartlett in the basket. It grows larger than the Bartlett. Our trees have obtained a height of twenty feet or more, and we have the pleasure sometimes of taking as high as six bushels from a single tree, and they bear every year. I would advise the people of our county to plant largely of Doyenne Boussock pear, Mr. Boulter will want them all. Grow as many as you can. I never saw a branch yet of the Doyenne Boussock blighted; I never saw a branch frozen, either, with us. We have had them growing right by Flemish Beauty, and the Flemish Beauty blighted and passed away. We would saw them down. We have grown them by the side of the Bartlett where it would freeze to the ground. There is another pear I want to speak of—Josephine de Malines; we grow that and place it in our cellar in boxes as carelessly as we would the apple, and in the winter season we just bring them up in the living room, place them in the drawer, and in about a week they are fit for the table. When there is a wedding anywhere near us, we have an invitation to furnish them a few Josephine de Malines. They come in a little after Christmas, and keep till spring. We usually get \$1.50 a peck for them, and any man that is not satisfied with \$6 a bushel for pears had better grow strawberries, and take \$2 a bushel, and pay a little more than a dollar a bushel for picking.

Mr. SMITH.—At what time does the Doyenne Boussock ripen?

Mr. DEMPSEY.—Just the next day after the Bartlett is done. The last of our Bartletts we usually ship with the first of the Doyenne Boussock.

The PRESIDENT.—Have you noticed that buyers, when there is no pear fit for use except the Bartlett, will take the Doyenne Boussock at the price of Bartletts?

Mr. DEMPSEY.—Yes; I shipped some Bartletts and Doyenne Boussock two or three years ago to Montreal in three-half-peck baskets, and when they arrived my agent there wrote that they did not sell as well as Bartletts. I replied to him to change the tickets—put the Bartlett ticket on and let the people have them. The result was they brought twenty-five cents a basket more than the Bartletts. This was only the superstition of the people; they wanted the Bartlett pear because of the name, and in my opinion it is only a second-rate pear after all.

Mr. BOULTER.—Is there a musky flavor about this pear similar to that of the Bartlett?

Mr. DEMPSEY.—No; they possess an acid that seems to give them a proper flavor when they are canned. They are not so good, as a table pear, as the Bartlett. There is a pear that I must speak in favor of, that is the Beurre Hardy. It is a very pretty golden russett, and attains a considerable size—about the size of a Bartlett—and the flavor is something delicious. We find that when our customers get a basket of the Beurre Hardy they want more. The Beurre d' Anjou with us is very shy in bearing. We get a few pears every year. I have only once taken as many as three or four bushels.

in a year. As to Flemish Beauty, I would not plant it if anybody gave it to me, and it is the poorest stock I ever tried for grafting on. Clapp's Favorite was a favorite of mine once, and I planted it to a considerable extent, but the trees are subject to blight, I find. They are hardy, it is true; but if they will die of blight in summer of what use is their hardiness? They bear a very light crop—perhaps produce as much as the Beurre d' Anjou, and the trees is sure to blight, so that I would neither plant it nor graft it.

Mr. WILLIAMS.—My experience with the Ben Davis apple has been very poor. I got some when they first came out some twenty years ago, from Ellwanger & Barry. I planted them in the garden in a good place, and for twelve to fifteen years I did not gather one bushel. There were four trees of them. I have re-topped them—that is, put the Ben Davis top on some other trees—put them in different ways, and I never succeeded well. I have noticed them through the locality about there, different places, and there is one orchard not very far from me has quite a number. I have never known them within the last fifteen years to have one good crop. A great many of them are inferior and worthless.

Mr. BOULTER.—I have twenty-five trees, and they never failed yet of having a crop each year, and bear very early. I think the Snow apple should be planted in a gravelly soil. It originated on the Island of Montreal, so I have always understood from my father. Two years ago they were so spotted that we discarded them. Three years ago we put down quite a lot of them. They are no good to evaporate; but for market purposes in Montreal there is no apple brings more money in certain seasons of the year than they will. The Maiden's Blush has been a very successful grower. Four years ago I grafted quite a number of Flemish Beauties on the Tolman Sweet. I believe if they can be made a success it is going to be a good tree to graft pears on. I don't know whether one could grow pears on a sour apple tree; but I never saw thriftier grafts than are growing on my Tolman Sweet trees. A neighbor took first prize at our township fair, for pears grafted on Tolman Sweets.

The PRESIDENT.—Have you ever heard of the grafts breaking off?

Mr. BOULTER.—No, I have not.

Mr. YOUNG.—Have you ever seen pears grown on thorn?

Mr. BOULTER.—I have seen them.

DELEGATE.—Did they have the same flavor?

Mr. BOULTER.—I don't know. These were a good flavor that were grown on the Tolman Sweets.

Mr. WILLIAMS.—My experience in putting pears upon apples is very much like grafting the pears upon the Thorn apple; they did not unite well. I have had the graft four and five inches around, and the apple stock did not increase in proportion. You would have to tie up the scion to keep it from blowing off with the wind. It never appears to unite its wood well with the apple; and I have seen the Thorn that is grafted with the pear in the same way.

Mr. YOUNG.—I tried pears on thorn once, and it did not seem to have the same flavour as it would if grown on its own stock. I never tried it on the Tolman Sweet. In the Thorn the pear seemed to grow so much faster that it bulged out and grew very slender, it grew in a few years twice as big as the Thorn, and after a while it grew so large it broke right off. The pears were very fine, but I don't think the flavor was quite as good. Can any person tell why it was that last year the Snow apples were very smooth and nice, and heretofore they were specked and spotted? Mine were spotted, so I cut the tops off and grafted Ben Davis in. They grew up into bearing, but I found they were a very poor apple. I said to myself, "As soon as the Englishmen find these apples out they will be disgusted with them," but if we can add lemon juice to them and make them all right, probably we will get rid of them anyway. The strawberry business I have some experience in. I use the Wilson altogether. I have grown 2,400 quarts in a quarter of an acre, but that, of course, was a very good year for them and they grew up all right, good size.

The PRESIDENT.—Which of the old varieties of apples do you prefer for the market?

Mr. YOUNG.—The Spy; and I have planted the Spy chiefly.

Mr. DEMPSEY.—The great difficulty with the Ben Davis is that it inclines to crop too much, and we must thin it. The way we usually thin ours is by using a pair of shears that we work with a little lever, the same as we do for cutting branches off the trees for telegraph wires, and with it we cut off the fruit spurs. When the tree over-bears the fruit does not color properly nor does it attain a good size. There is an idea here about the apple spot. I noticed in the *Horticulturist* the sulphate of copper in solution is recommended for the apple spot—that it would destroy this fungus growth on the apple. I have never tried that, but I have tried the sulphate of iron and by frequently using the sulphate of iron in a liquid form at the roots, I have more than doubled the size of my fruit. I remember once taking the fruit I had grown that way and shewing it at the State Fair in Utica, and even Barry could not recognize some of the common varieties, such as Belle Lucrative, Beurre d'Anjou. I took a specimen of Flemish Beauty that weighed fifteen ounces. These results were produced by the frequent use of the sulphate of iron. I am not going to say it adds to the flavor of fruit; I would not advise it for that purpose.

The PRESIDENT.—Did you not find that it added to the color?

Mr. DEMPSEY.—It heightens the color some, but not materially. It prevents any rusty growth on the fruit. The fruit is invariably smooth and fine where we used it. Sulphate of copper is nearly the same nature, somewhat stronger; we would use it in smaller quantities than sulphate of iron, would we not?

The SECRETARY.—Yes.

Mr. DEMPSEY.—One is ordinary copperas or green vitriol, and the other is blue vitriol, that is all.

Mr. YOUNG.—Don't you think by opening the top of the Ben Davis you would color the fruit?

Mr. DEMPSEY.—I don't believe in this pruning out of the interior branches. We try to encourage branches in the inside of the tree, and I find the specimens grown inside color fairly, even though they are almost entirely shaded.

THE FUNGUS ON THE APPLE.

The PRESIDENT.—As Mr. Dempsey touched on the fungus scab on the apple, we will take question 5, viz., "What is the cause of the Fungus-scab on the apple?"

The SECRETARY produced a diagram sent by Prof. Panton, of Guelph, who could not be present owing to his college duties. The Secretary said: I find on this paper an illustration of the apple spot which might help us at this time. Here is a section of the apple, showing how the apple scab develops and grows. The apple scab is a fungus; that position has been thoroughly demonstrated by botanical students. It is a fungus that grows on living matter, not on dead matter as the mushroom, and it affects the pear, and also the leaves of the apple as well as the skin of it. It is propagated by little spores, very tiny indeed. About three thousand of them might be placed side by side lengthwise in an inch of space. They float about through the atmosphere very easily, and light upon the leaves and upon the fruit in the spring time. They live through the winter, and are carried around in the atmosphere in the spring time, ready to light on the leaves or upon the young fruit, and develop. As soon as one of these little tiny spores lights upon a leaf or upon fruit, it immediately throws out little threads, which penetrate into the cells of the interior of the apple or the leaf, and this growth continues among the cells. It can be very poorly represented here, of course. These, after a time, thrust out through the little openings or stomata of the apple or leaf a little growth of threads, and each of these threads bears spores which propagate the disease. This spot has been troubling us for about ten or twelve years in Canada, and yearly growing worse, and we have been discussing it at different meetings, watching its development and fearing we would never find any means of getting over the difficulty; we have been trying various experiments, such as hypo-sulphite of soda, hoping it would prove destructive of it. I tried this solution very care-

fully and very faithfully last year, but as there was no fungus scab anywhere, I could not tell whether the hyposulphite of soda was a success or not. The proportion recommended is at the rate of one pound to ten gallons of water. Another remedy, which, should the spot prove troublesome again, we might try, and therefore I will give it. This is recommended by the Botanical Department at Washington. It is Eau Celeste, and this is the formula : one pound sulphate of copper in three or four gallons of hot water. When dissolved and cooled, add a pint of liquid commercial ammonia. Dilute with twenty-two gallons of water. This should be applied twice in the spring, in May and in June. Two or three applications would be better than one application.

The PRESIDENT.—Can you give any reason why some varieties are attacked and others not?

Mr. GIBB.—The Russian varieties appear to be clear of it, while the native varieties, such as the Snow, appear to suffer the most.

The SECRETARY.—I don't know the reason, except it be that some varieties have a glossier surface. Perhaps it is not so easy for the spores to find entrance through some of those thicker-skinned varieties that have a varnish-like cover ; and some of those varieties, I think you will observe, have it more than others.

DELEGATE.—The Snow has a thicker skin than the Duchess.

Mr. GIBB.—I don't think it would be the thickness ; I think it would be the smoothness. The spores being borne around would naturally attach to the rougher.

Mr. YOUNG.—Do you think it would make a difference between a dry or wet spring ?

The SECRETARY.—Yes ; I think that a partial explanation of the question asked why last year it so suddenly disappeared. It is possible it was owing to the dryness of the weather at a certain time of the year, and we may suppose that the fungus was largely destroyed, and the spores therefore were very few.

Mr. GIBB, of Abbotsford, P. Q.—This spot is rather an old affair, but people don't seem to know it. With us we had it in a small way, and our people hardly noticed it. Of late years it has been increasing rapidly. We find the spot appears on the apple when it is about the size of a pea. We think it depends then on the kind of weather we have from that time on. If from that time on we had a good deal of moisture in the air, that we think is why it increases ; but if we had dry weather we think we have very little. This year rather corroborates the point that our Secretary has just stated.

PRUNING AND TRELLISING THE GRAPE.

On resuming after lunch, the next question taken up was, What is the best way to Prune and Trellis the Grape ?

The PRESIDENT called on Mr. M. Pettit to describe his method.

Mr. M. PETTIT (Winona).—It is a very difficult thing to describe how to prune the vine ; there are so many things to be considered—the strength of the vine, the age, and many things in that way.

The PRESIDENT.—Begin with the first year after blooming.

Mr. M. PETTIT.—The first year after planting I cut them back two buds ; that is after they have had the summer's growth. When I plant the vine I cut back to a bud or two, then after the summer's growth cut it back again two buds, letting only one cane grow the third summer. That cane the following spring I would cut back according to the strength. After making a good growth I would leave it say from two to three feet long. After it starts rub off several of the lower shoots. Leave four or five shoots to form the vine, and of those shoots I would select two that are in good shape the next season's pruning to make permanent arms. Although I prune principally on the fan system, we generally have something in the way of arms to support the vine. With regard to trellising I use three wires on posts or stakes ; the first one about two feet high, and the upper one six feet.

The SECRETARY.—It seems to me that far the neatest system is that what is known as the Fuller system, described several times in our journals. We have been practising the fan system in Grimsby, that is, simply spreading out in the shape of a fan, the different branches you wish to retain for fruit, over the different posts. I have posts twenty-five feet apart, and three wires; but I don't like the fan system nearly as well, as the Renewel system; according to the latter, we train first two main laterals, which are permanent, to reach four or five feet in each direction, and from those to train fresh upright branches every alternate year for fruit, training these up the wires to the top; and I think nothing makes a vineyard look so tidy. There are some vineyards in the vicinity of Hamilton that have been pruned in that way, and I don't think anything is so tidy, and I don't think anything is so satisfactory. It may be a little more trouble than the ordinary way, but I think it is so satisfactory that we ought to adopt the best method.

J. A. MORTON (Wingham).—You say fresh alternate branches; what do you mean by that?

The SECRETARY.—The one that is bearing you leave two years. The one that you grow up this year you let it remain two years with spurs for fruit bearing, and then cut it out entirely after that. These are alternate. There will be one branch a year old, and one two years old, all along the whole vineyard.

Mr. WILLIAMS (Bloomfield).—What height from the ground would the main leaders be?

The SECRETARY.—I think one foot is plenty high enough. In that case it would be necessary to have the wire about a foot from the ground. If you wish to lay the vines down you have to loosen all the strings, and the main laterals ought to be very close to the ground. The main, after it gets old enough, would require very little support to keep it in its place.

Mr. CASTON (Craighurst).—I followed the Fuller system laid down in the *Horticulturist*, and I found it very satisfactory so far. The first year I rub off all the shoots except the stronger one, and I train that to a stake, let it grow four feet, and then stop it; then in November I cut it back two buds and cover it in the winter time. We have to do that in our section of the country in order to be safe. Then in the spring I train up two shoots, let them grow the same distance, about four or five feet, and the next year I cut them. On the trellis I put the first wire one foot from the ground, and on this I extend the two main laterals. Then I train up branches to run up to the top of the trellis. Near the bottom of these branches is where the fruit forms. I pinch out all the side shoots. It is principally Concord I grow. My idea in asking this question was to see if there was any better way. After you get the branches trained to the bottom wire there are two methods; one is to cut back the two buds every year, and let the strongest of those two buds grow the following year, and the other is to cut out alternate years, leave one branch to bear the next year, and the following year cut that out and let another one be. My idea so far is to cut back two buds, and I lay them down and cover them with manure; and if I can't get enough of that I cover with earth and leave them till growing weather sets in in the spring. In the Grimsby district they don't cut them down at all. By the fan system it would be difficult to lay them down in the winter. The Fuller system would be best where you have to lay the vines down.

Mr. MORTON (Wingham).—The system I adopt is not usually pursued. I believe the Kniffen system is the best, and I believe it would suit Mr. Caston best, because the stock would not grow so much in the same length of time, and therefore would be easier bent. The Kniffen system is to train two branches one at three feet high, and the other at five feet and a half high. You string two wires—one three feet high, and the other one on the top; and that is all that are used. You can train the vine either of two ways. The best way I find is to run two shoots from some branch commencing at the bottom, running one to the top of the trellis, and extending one out, and also a pair on the two and a half feet wire. One reason why I like the Kniffen system is this: In the Fuller system you have to allow the growing branches to go upwards; that is the only way that they can; there is not room enough to allow them to grow down. Now, the natural tendency of the grape vine is to grow upwards. You all see that

if you look at the wild grape vine. It will climb in a few years up to the top of a tree forty or fifty feet high ; and your grapes grow right at the top, right at the end of the branches. If you train the vines so that they grow upward you are going to have a great growth of wood. In the other system there is nothing for them to take hold of ; they have to drop down ; and that checks the growth of wood, and you have less pruning to do for your vine ; and a vine has a certain amount of energy, and if it does not expend it in fruit it is going to expend it in wood. You control it, therefore, by the position in which you have forced it to grow, and that energy is devoted to fruit instead of wood. Take two vines, one according to the Fuller system and one according to the Kniffen system, and you would have three times the wood in the Fuller system. Even in the Fuller system you cut back the greater portion of the wood, and the fruit grows on the two or three joints nearest to the old wood. What is the use of having a vine expend its energies that way, when you have to cut off and give yourself trouble ? Some people have trained the straight stem up five and a half, and two branches at about two and a half feet high, and another one up five feet. The effect of that will be, there will be more fruit growing on the top branches than on the side branches. That can be obviated by growing the two separate vines from the root, so that the top two branches spring from the vine at a point lower than where the lower two branches leave the vine. I have had great success with that. It cost me less labor. I don't know that I am any lazier than any other man in the world, but probably I exhibit it more. (Laughter.) I think a man is a fool who would not adopt a system that will give him the least work.

The SECRETARY—You train back to the horizontals every year ?

Mr. MORTON (Wingham).—Just exactly ; it is the spur system of pruning.

Mr. MITCHELL (Innerkip).—I have found that there is a certain balance between foliage, or top, and root ; and if we prune anything too heavily we do it at the expense of the root and the vigor of the plant.

Mr. A. M. SMITH (St. Catharines).—My system is generally a combination between the fan system and Kniffen system—sometimes one and sometimes the other, just according to the habit of my vine. If I have a very rambling growing vine I generally take the fan system and give it plenty of room. I generally take that system which will give me the less trouble in pruning. I believe in renewing crop wood as often as possible. There is one difficulty in the Kniffen system, in renewing, to get the arms in the proper shape. You want to bring out perhaps a new shoot, to train it over the top or bottom of the vine. It may accidentally get broken off, and you are one arm short. That is the only objection I have to the Kniffen system. On the fan system you can take any strong leader you like and train it where you like ; and the same with the Fuller.

Mr. DEMPSEY.—We prune our vine as Mr. Morton was saying, but have also the we fan system. It is natural for the larger clusters to grow on the extreme ends of the vines when it is grown upright or nearly so. In the open air there is no system equal to the two wire or Kniffen system.

FRUIT GROWING FOR CANNING FACTORIES.

Mr. Wellington Boulter, proprietor of the Bay of Quinté Canning Factories, Picton, read a paper on "Growing Fruits for Canning Factories," as follows :

As all fruits used in hermetically sealed cans require to be fully matured naturally before delivering at the factories, the advice given bears more directly in that direction than to marketing otherwise.

First, we will take the strawberry. In selecting varieties agents will attempt to show excellence in many new high-priced and untried varieties. I do not nor will I attempt to argue even on the many tried varieties suitable for eating fresh or adapted for different markets. For hermetically sealing, preserving its natural color, flavor and

shape, none will bring so much money at my factories or sell for as good a price when put up as the old fashioned Wilson's Albany. Many others have been tried but none will so far compare with it.

Strawberries will grow on any kind of well-drained soil, provided the season affords the requisite moisture. A sandy or clay loam is the natural home of this plant. Do not confound a moist soil with a wet or springy one ; better a dry soil, that would suffer during a drouth, than springy land, as it would generally prove a failure. Land sloping to the south will produce earlier berries, but would not be of any advantage in growing for factory purposes ; for early marketing it would have some advantages. The ground must be thoroughly tilled the season previous by a hoed crop, scuh as potatoes or beans, or early crops, so as to get it off early in the season ; then plow as many times as possible before frost sets in, care having been taken to put a heavy coating of manure on before the hoed crop is put in ; it is hardly possible to get too much manure on the land, at least thirty wagon loads to the acre would not be too much.

Get good plants from the first growth of the previous year's setting, and particularly from a reliable grower who has kept his patch clean—*be particular concerning this.* The plant must be put firmly in the ground, as deep as possible without covering the crown. The small roots shooting out from the main roots of the plant must not be disturbed. Once a plant is firmly set it must not be loosened ; if it is, possibly it might recover, but the chances are against it. Cultivation must be attended to soon after the plant is set. Hoe very shallow near it ; many hoe too deeply near the plant, cutting off the small roots that should remain. The ground must be cultivated so that no weeds will show themselves. As soon as the ground is frozen hard enough to bear the weight of the wagon, cover your plants with straw about two inches deep—the object is to keep the ground from freezing and thawing with every change of temperature. No particular time for removing the straw in the spring can be given definitely. It should remain on the berries until there is growth in the ground, but the plants should not be allowed to grow under the straw. If your patch has been properly cultivated the previous year as described, keep yourself and everything else off it until the berries are ready for picking, and they will likely be clean and free from sand ; strawberries that have to be washed before hulling are nearly worthless for canning purposes.

The same soil that will grow good strawberries will grow raspberries. The land should not be so heavily manured as for strawberries, if it is it will produce a rapid and long-continued growth of canes, which will likely be injured by the frost during the winter.

In reds, a dark colored, firm berry is required. So far with me, as an all round variety, the Cuthbert fills the bill. Many of the new varieties may be equally as good after being thoroughly tested.

In blacks, the Ohios for early and Mammoth Cluster for late have given good satisfaction. Although the Gregg is some later than the Cluster, and Souhegan and Tyler are the earliest so far tried in this locality. *Not many black raspberries are required, there is very little demand for them,* the reds being principally enquired for.

In reds, select ordinary suckers of one year's growth ; in blacks, the tips. In reds, set in rows seven feet wide and about eighteen inches in the row, unless party fancies hill culture ; from experience I prefer hedge rows. In setting out I run a deep furrow, pressing the dirt firmly about the plants, finish by plowing two furrows on each side of the plants ; many lose their plants when the dry weather comes on by not having covered them deep enough. After cultivation is about same as for corn—keep the cultivator moving. Tomatoes can be profitably grown between the rows the first season. Last year Mr. Wallace Woodrow, near here, from two thousand tomato plants, which would fill about three-quarters of an acre, four feet apart, picked four hundred and twenty-five bushels of ripe tomatoes, grown in this manner, besides a large number of green ones, which make splendid feed for cows, increasing the flow of milk. Should a vigorous growth of cane take place the first season, clipping off the ends in August and September will be beneficial. In the autumn plow through the rows, throwing the furrows towards the plants. In the spring cultivate the land thoroughly as soon as it is fit, hoeing them frequently ; keep them clean ; do not allow them to become matted. Never throw

manure under the rows, keep it in the center so that any weed seed it may contain can be destroyed by the cultivator. Unlike the strawberry the more you hoe and dig around the raspberry the faster it fills up in the rows. As soon as berries begin to form cease cultivating. If the season is likely to prove dry, using clean straw is advisable for mulching your ground. Cut out the canes that bore as soon as the berries are picked. Do not let the rows get too wide as they would generally grow so rank as to exclude the sun and air, which will detract much from the flavour. In blacks, as soon as the new growth gets about three feet high, nip off the ends. Shoots will spring out, then nip them off again, and you will soon get a large and vigorous bush. The old cane must be cut off at the ground every year, either after picking or early in the spring. The secret of success in growing raspberries is cultivation. They cannot grow if choked up by weeds or quack grass.

If you are near a factory it will pay you well to put out red raspberries. Much of the cultivation can be done with the horse, although forking up in the spring is a great advantage. So far we cannot get enough of them. If you wish you can fit your ground up early in the autumn, and set your plants in September or October, or before freezing; many have succeeded well then.

In other fruits, such as red and black currants and gooseberries, so far the supply has been so limited we have packed very few. They are principally used for jams and jellies. Grapes are packed largely in California, so far there is very little demand here for them.

In pears we can only sell the Flemish Beauty, Clapp's Favorite, or varieties similar in taste. Bartlett's are also in demand. So far we have had to import largely the latter from the U. S.

Apples are used now for canning purposes, the demand has grown largely in the past few years; the well-known early and late fall varieties being used. The best flavored varieties are the best, as whatever flavor it contains when peeled is retained when hermetically sealed. Do not pick up and bring to a canning factory wind-fall or bruised apples; they are useless; no man can use them successfully.

In plums, none excel the Blue Damson, the large varieties generally cook to pieces, they will remain natural. Green Gages and Egg plums are also in demand. So far the demand in Canada is limited for plums, but steadily growing.

Peaches in fruits, like tomatoes in vegetables, are the staple, but Canada so far has not produced enough peaches, not being a peach-producing country. To sum up, bring only the best that grows.

Make up your mind that you are in partnership with the packer; what is his interest is yours. By the growing of vegetables and fruit combined many comforts can be added to your homes, and you will be much better off financially than in the past, when attempting to depend entirely on grain growing.

Mr. MITCHELL.—Is it best to cut the straw with a cutting machine?

Mr. BOULTER.—No; put it on long.

Mr. MITCHELL.—They cut it up with us and then leave it on.

The SECRETARY.—What have red raspberries been worth here to the growers for canning?

Mr. BOULTER.—The average price has been six cents; it is according to the quantity of course. At present prices of selling no man can successfully pay quite as much as that.

The SECRETARY.—What varieties do you like best?

Mr. BOULTER.—In reds, the Cuthberts.

A DELEGATE.—How did the Shaffer do?

Mr. BOULTER.—Turned out to be an excellent berry and keeps its color well. The trouble with most of these berries is they won't cook in the can. Understand that hermetically sealed goods are put in the can in a natural state, just as they grow, and the cooking is done in the can, so that you must have a berry that will not cook to pieces and will keep the flavor. Cuthberts stand very well. In Winnipeg last year one wholesale man said they were so good that you could taste the dew on them. (Laughter.)

Mr. CASTON.—The Wilson is the best strawberry.

Mr. BOULTER.—Yes, I would not put up any other variety. Others are very nice, but you have got to have a dark red berry.

Mr. BOULTER.—You can't get as much from an acre of ground from raspberries as you can from strawberries; but the farmers generally succeed best with raspberries.

DELEGATE.—What would you consider a good average crop of red raspberries?

Mr. BOULTER.—From two to three thousand quarts per acre. Had I known that little point about throwing manure under the rows two years ago I could have saved many dollars. It does just as much good, however, to keep the cultivator going between the rows.

A. A. WRIGHT (Renfrew).—Since I have commenced selling Mr. Boulter's fruit I have not had one bad can. That is a very important item to you people around here who grow the fruit, because if Mr. Boulter can sell cans that will sell again, your trade of course is going to grow. You don't know how a merchant feels when a man comes back and tells you that he bought a can of your fruit and it made all the people who ate it sick. If Mr. Boulter continues putting up good fruit it will be a grand thing for us merchants, because we can sell two or three times as much. With reference to planting out strawberries, I understood Mr. Woodrow to say he transplanted them the second time.

Mr. WOODROW.—When I set my plants this spring I set them in rows five feet apart and let them run and made yearling plants for setting next spring.

Mr. BOULTER.—I took a trip out to Winnipeg and Victoria last year. I sent the first can of goods that ever went over the Rocky Mountains to the Pacific Coast. They turned out all right. I was within two days' journey of San Francisco. They said the goods shipped them were better than any goods that ever came from San Francisco or Victoria; then they gave me an order for five cars of goods, which I shipped out there last year. The only complaint was that the labels were not got up as tastily as the American ones.

Mr. WRIGHT.—When we open the cases we find the labels are all worn and musty.

Mr. BOULTER.—This party in Victoria said the Americans could grow better grapes, but the other goods—apples, pears, plums—here are superior. I put up five thousand bushels of Damson plums and sold them for \$14,000 in the city of Rochester—sold them to the Americans. We grow as fine plums as ever grew anywhere. The most successful growers are those who have Blue Damsons. The plums we grow are far better than they grow in the Maritime Provinces.

BLACK WALNUT TREES FOR LUMBER.

The PRESIDENT.—A gentleman living near Montreal would like to know if black walnut trees are sufficiently hardy to grow, for the purposes of lumber, in this locality.

Mr. GROVER (Norwood).—After I first began to plant black walnut I made the same enquiry as this gentleman. One of my neighbours said it would not grow here at all. I accidentally heard of Mr. Joly, of Quebec, and wrote to him. He sent me back a little pamphlet he had published a year or two ago saying that he had planted twenty-five bushels of black walnuts and they were then bearing their first crop at or near Quebec. I thought there would be no trouble, therefore, in central Ontario. I planted a large quantity and imported a large quantity of seedlings, and they are doing very well indeed. I don't see any trouble in raising them here as well as hickory or butternut; they seem to do as well, or perhaps a little better.

The PRESIDENT.—The next question is, will it pay a farmer to plant good land to walnut trees?

Mr. GROVER.—That involves a further question. The first factor is, What is good land worth? If you have had the experience I have had, there is very little profit in farming. Prof. Brown has figured out that every farmer of 200 acres ought to clear \$2,000 an acre. I cannot find that any other farmer thinks so. There are very few farms that

are worked to the fullest extent. There are a few acres that we never can reach, perhaps across the railway track, or across the river, or across the hill, which, although just as good land as right near the homestead, are not conveniently worked. My experience is that that land cannot be profitably worked by the owner of the farm; it is not so convenient to manure it and harvest it, or to work in any way whatever. It seems to me that is the very land we can afford to plant in walnut trees. I have laid out the best land I can find to see what walnut will do on good land. I have also planted on poor land. My experience is that it is just as satisfactory on good land as any other crop you want to sow. Land not occupied by the owner at all, in the hands of a female or of a corporation, where you have to pay for superintendence and management, counting the time lost, putting on improvements and repairs, etc., will bring very little income. I have looked up the amount of rent that land will bring in Ontario. The Government report in Ontario represents it \$3.60 an acre in Brant or Oxford; \$3.60 is what the tenant pays. That includes \$3,000, or \$4,000, or \$5,000, or \$6,000 worth of buildings—say \$2,000—and includes a lot of fencing which is rapidly deteriorating. Now, count the odd years when a man is to get no rent and pay for the repairs; you find you will lose from one-seventh to one-third of the whole rent and bring it down to a little over \$2 an acre; and I am certain that, counting Prof. Brown's estimate of walnut trees, you will see that, after four or five years it requires no labor, or superintendence, or expense, at the end of four or five years it will pay a very good profit. Prof. Brown also found that small walnut trees, three or four inches, can be sold for veneers. In Essex, and Lambton, and Kent they are digging up old walnut stumps and carrying them off to the States to manufacture. All over Ohio they are hunting around for any old remains left on the farm. Black walnut is to-day the most valuable timber, and the most rapidly growing into value, of any timber a man can plant.

Mr. BOULTER.—Give us your information where the walnuts could be purchased.

Mr. GROVER.—Any nursery in the States can furnish any of them. Mr. Smith, in St. Catharines, can also furnish them. I notice an advertisement here in the *Horticulturist* of seedlings. It is just as easy to handle as the potato; all you have got to do is to stick it in the ground, and you can't help it growing.

Mr. BOULTER.—You plant the nut itself and grow your own?

Mr. GROVER.—Yes; I put them out last fall myself. Plant them in fall wheat stubble, or plant them in any ordinary soil. They are very thrifty; they will grow from the nut. I have arranged them four feet apart every way. I planted them more for the purpose of cultivation, eight feet apart in rows; then you could cultivate those rows with currants or any thing you like. It takes 4,700 trees to an acre at four feet apart. 2,000 walnut trees on an acre of land would be a pretty handsome piece of timber.

TRANSPLANTING SPRUCE TREES.

The PRESIDENT.—A delegate would like to know the best method and best time of year to transplant spruce trees. Will they succeed on high, dry ground, or must they be grown on moist ground?

Mr. SMITH.—He has reference to native spruce. I have never had much experience in transplanting spruce from the forest, but our best time for Norway spruce we consider is in the fore-part of May, about the time the buds are starting out. The Norway spruce will grow on dry ground.

Mr. BRISTOL.—I bought eighty spruce trees for the use of the cemetery. I put out about eighty last year, and out of eighty some eight or nine are alive. I put out about a hundred this spring and about eight out of ten are now dead. The most of the land is high and dry. They live much better down in the valley.

A Delegate.—What time did you plant them?

Mr. BRISTOL.—About the last of April. Last year we planted them about the middle of June.

Mr. SMITH.—The great secret of transplanting spruce or any kind of evergreens is in keeping the roots moist. If they are at all exposed to the influence of the sun or dry winds between the digging up and the planting out, you might just as well throw them on the brush heap. There is a resinous substance which, if it once becomes dry, it closes up the pores of the roots, and they are gone.

Mr. BRISTOL.—Do you think that if we get them from the nursery that would be any better?

Mr. SMITH.—I think so, if they are properly packed.

Mr. WRIGHT.—Send your man out to the forest on a rainy day, and set them out at once and they will grow.

Mr. CASTON.—To my notion there is nothing prettier than our own native spruce, and I find nothing easier to grow.

The SECRETARY.—The white spruce.

Mr. CASTON—Yes. It grows to be a very beautifully shaped tree. A good time to plant it is the first week in June, on a rainy day; and if you can't get a cloudy or rainy day in the first week of June, you had better postpone your planting till next year. Take as much soil as possible, and they are almost sure to grow. I have them living this year that were transplanted the first week in June, and I only watered them a few times after planting.

Mr. WRIGHT.—As fine a row of spruce trees as I ever saw was planted on Dominion Day, the first of July; everyone lived.

HYBRIDIZATION.

Mr. P. C. DEMPSEY said: This subject I feel very delicate in undertaking, when I look about me and see so many persons that are well up in botany, in fact, botany their hobby. However, allow me to acknowledge certain authors upon this subject. Some years ago we posted ourselves in VanMons' theory in producing new fruits. VanMons' was in the habit of growing from seed first, and of the first fruits that these seedlings produced he would plant the seeds, and by passing them through two or three generations in this way he would generally find that he had arrived very nearly at a state of perfection. By this means he produced some very fine fruits. In VanMons' day, however, such a thing as crossing was unknown. It is, comparatively speaking, a new theory in the production of new fruits. Again allow me to acknowledge some individuals. I have learned much in private conversation with men like our own Mr. Saunders upon this subject; from Mr. Ellwanger, who was so successful in producing new roses from crossing, and from many others that have been successful. Now what we usually understand by the word hybrids is only cross-bred. The producing a hybrid would be the result of crossing two different species, but we often miscall it hybridizing where we are simply crossing two varieties of the same species. Mr. Hilborn was telling me to-day that they had succeeded in Ottawa this year on the experimental grounds in crossing the strawberry and the raspberry. That, I presume, might be called hybridization, but in crossing two varieties of the same species, like the pear or the apple, it is really not producing a hybrid. The object in crossing them is simply to get a variety for instance possessing the constitution of an inferior fruit and the quality of a superior fruit. That is the main object we have in cross-breeding. Now in order to do this, let me describe the principle of operating upon the blossom. Let my hand represent a flower. Let my fingers represent the stamens, and my thumb the pistil with the stigma at the terminus and the embryo fruit at the base. In order to hybridize or cross that flower with another variety we simply have to open a blossom artificially just before it is ready to burst, by hand, and pick off with a small pair of tweezers all these stamens, and we have the naked pistil exposed. Then we gather when ripe the pollen that is contained in the anther of the stamen when perfectly ripe, ready to burst, or rather have bursted; we gather it on a fine camel's hair brush and apply it to the stigma of the flower

from which we have removed the stamens. We don't always use a camel's hair brush. I have done it with a pencil, or my finger, or anything that is most convenient at the time. When we remove these stamens it is necessary that we should protect this flower, either by a bag made of paper or one made of thin cloth ; but the cloths should be very fine and very close in order to insure against the air carrying these small grains of pollen—they are very small, indeed ; we scarcely can see some of them with the naked eye, and they are in danger of passing through a coarse gauze, consequently it is necessary to use a paper or a very fine gauze. Then, again, we run another risk when we open this for the purpose of applying the pollen. The plant should be examined twice at all events after removing the stamens, and when we open this we are in danger of the flying pollen in the atmosphere dropping on the stigma of the plant, and so we fail in getting a cross between the varieties we wish to cross, so that we often are looking forward to a success when we fail entirely. After we have a blossom crossed we simply watch the fruit to see that nobody gets it and runs away with it. We take good care that we have that fruit matured. We plant the trees growing from its seed and watch them very carefully until we get them into fruiting.

The PRESIDENT.—When you bring your tree into fruit then you ascertain whether you have succeeded in the crossing or not ?

Mr. DEMPSEY.—You can always tell from the growth of a tree whether you have succeeded in having a cross or not. For example : I have a pear that has fruited for some few years. There are some here that have had the pleasure of eating it. That tree was the result of a cross between the Bartlett blossom fertilized with the pollen of the Duchess de Angoulême. You can see the cross in the growth of the tree. You can see the two appearances distinctly in the tree ; the form of the buds resembles the Duchess, though it is produced from the seed of a Bartlett. The growth of the wood looks like the Duchess, and you will see this even in the fruit and even in the foliage, both the Bartlett and the Duchess ; you can see at once that there is a cross effected there. Again, in the flavor you can taste the flavor of the two varieties. The season of maturing is nearer that of the Duchess than that of the Bartlett. It is a late pear. We have crossed several other things, and perhaps I will be digressing if I told of them, such as vegetables, flowers, etc.

The PRESIDENT.—In planting the seed of that first fruit, the result of the cross, do you find that each seed, if it is a success, produces the same or a different variety ?

Mr. DEMPSEY—Each seed produces a different variety, and then you select from that. You would be surprised to see that perhaps from the same fruit one variety would be large and another small, and one variety liable to rot at any time from the core and the other improving the longer you keep it—commencing to ripen, in other words, from the outside. This is a very important point in pears, to get such varieties as do not commence to rot from the core, because we are often disappointed in pears—they are rotten and yet look perfectly sound.

Mr. CASTON.—Do you find it a difficult matter to hybridize a grape ?

Mr. DEMPSEY.—No, it is no difficulty at all. It is all done as I showed you, and what will apply to a pear will apply to the grape. There are some varieties of strawberries, such as the Manchester or the Crescent Seedling, on which there are no stems to remove and which do not produce any pollen ; and all you have to do is gather the pollen from the variety you wish to cross them with, protect the pistil and dust the flowers, and you have a cross. In vegetables, for instance in the cucumber family, the pollen is on the stem, that is, stands up near the foliage, while the pistil blossom is attached to the embryo fruit running almost horizontally on the vines. It is a little difficult to cross the apple with the pear. We did produce, however, a couple of trees that I supposed to be a cross. A neighbor of mine was quite conceited in his knowledge of varieties of fruit, and told me he had never been shown a specimen of fruit, except three, in all his life that he couldn't tell the name of, so I took one of them out of my pocket and asked him what variety that was. "Oh," he says, "You can't fool me, that is a little Tolman Sweet." And I told him to be sure and look very carefully before he decided, that he might be mistaken, and so on ; and his son was by and said, "No, father, you are mistaken this time, that ain't an apple at all,

it is a pear." "Well, they two had to argue the thing out, one arguing that it was a pear, and the other arguing that it was an apple. However, there is one thing I will say, that it was just about as worthless as anything that ever grew in the world (laughter), but it shows that a cross may be effected. That was a genuine hybrid.

Mr. CASTON.—In crossing the grape do you just hybridize one blossom or go over the whole bunch?

Mr. DEMPSEY.—The blossom that we don't operate on we simply cut off, and that is necessary. You could not protect one blossom simply, but you must protect the whole bunch—have a bag and draw it over. There is one theory that Professor Saunders has been advocating that we should not lose sight of, that is, the constitution of the progeny invariably comes from the female. Now this, I think, can be adopted, from the fact that he has crossed a great many different species of fruits and flowers, and this, he says, is the result of his experience. If you want a strong tree don't fail to select a variety for the female parent with a strong constitution, and for the quality of fruit you can almost invariably depend upon the male. This theory, of course, fails to a certain extent under some circumstances but generally you can calculate that it will be correct. Now to prove to you the influence the male has over the female parent in the producing of cross breeds I will mention that we crossed some corns last year. Where we had a cross between the Yellow Flint Corn as the male, and the Stowell's Evergreen, a sweet corn, we found invariably it produced a Yellow Dent Corn. Then we reversed that, and where the cross was reversed the Yellow Flint Corn used as the female, and Stowell's Evergreen used as the male it produced a sweet corn. We crossed a few flowers some years ago. You that have a great amount of patience I advise you to try. I crossed some Japan Lilies with the Amaryllises, and I was able to show the result some thirteen or fourteen years after I made the cross. (Applause.)

FORESTRY AND TREE PLANTING.

Rev. George Bell, LL.D., of Queen's University, Kingston, read the following paper :

In the thoughts which I desire to present to the Association, I do not expect to offer anything new, but considering the immense importance of the subject, I shall be satisfied if I can awake attention by reiterating truths known to you all, but the force of which is overborne by the inertia of ordinary human nature, and other causes.

In its state of nature, our Province was largely covered with thick forests. and the severe labor imposed on the first settlers of hewing out homes among them and clearing the land for agriculture, and the building of towns and villages, very naturally led to the belief that all trees were man's natural enemies, to be got rid of as speedily and completely as possible. The same process of cutting and burning went on in this country, as formerly in older ones, until we are beginning to find our rivers destructive torrents in spring, and so dried up in summer as to be in many cases worthless as water-powers or waterways; our lands dried up and scorched with sweeping winds in summer, and our tender fruits damaged by the blasts of winter. At the same time our supply of valuable timber for building and other purposes is in many localities becoming scarce and expensive.

In many of the countries of Europe large tracts of forest are owned or managed by the Government, and, although involving heavy expense for management, furnish some return of revenue from their annual produce. Our country is younger, and the same necessity of careful attention to forestry is not so apparent, yet everyone who gives the matter much thought must be aware that it is none too soon that something very decisive should be done, and very widely done, if as a people we are not to suffer serious loss from the bareness of the country turning it into a partial desert.

Let me refer for a moment to the ways in which the country is being denuded of trees :

1. *Cutting down in clearing.*—It has often been said that farmers should not make a clean sweep, but should leave some young trees to grow up. But some make that suggestion who do not know the difficulty in the way of carrying it out. It is extremely

difficult to save small trees growing in dense forest during the process of clearing, and even if saved then they would die afterwards, or only prolong a sickly life in their new environment. The true remedy in this case is replanting. In open copse wood the case is different, and where small trees are growing where they can be easily preserved and are likely to make a healthy growth, some should be saved.

2. *Wasteful lumbering*.—The incidental destruction of living timber, directly in connection with the getting out of square timber and saw logs, and indirectly by increased danger of fires, is enormous.

3. *Fire*.—The annual loss from this cause is a fearful source of injry.

4. *The construction and maintenance of railways*.—Few have any idea of the extent of the consumption of timber by railways, or of the incidental destruction caused by providing this timber. I submit some statistics respecting American railways from the United States Department of Agriculture, Forestry Division, on this subject (for the year 1886): *Ties*, 187,500 miles of track at 2,640 ties per mile, 495,000,000 ties, containing 1,485,000,000 cubic feet of timber. *Bridge and trestle timber, etc.*, 2,000 feet per mile, 375,000,000 feet. For both, 1,860,000,000 feet, or allowing 1 $\frac{1}{2}$ foot of round timber for each cubic foot in use, 3,100,000,000 feet of round timber. *Telegraph poles*, 5,000,000 at 10 cubic feet each, 50,000,000 feet. For 5,000 miles annually of new construction, add 13,200,000 ties, 10,000,000 feet of bridge timber and 150,000 telegraph poles. As ties last about seven years and the other timber about ten, the maintenance of the work involves an annual requirement of 254,643,000 feet. It is estimated that for the railways in existence in the United States, about 8,500,000 acres of timber land have been cut off, and for annual maintenance and new construction 297,000 acres of heavily timbered land will be required. It is impossible to give an estimate of the consumption of timber for fencing, fuel and other railway uses, but the amount must be very large. As only a few kinds of timber are suitable for ties and some other railway uses, it follows that the supply is being rapidly used up, and that the certainty of a famine can even be only mitigated by an immediate attention to economy in use and extensive renewal of growth.

I have not at hand the information necessary to show in what ratio these figures will apply to Canadian railways, but as the consumption for equal lengths of track will not be very different, any one who has the figures of the comparative mileage (of track, not length of road) in the two countries, can make the calculation for himself.

The question of lumber supply for buildings and other domestic purposes is a very important one, and in this the danger of famine and necessity of foresight are still greater than in the case of railways. Steel bridges and ties will in time supersede wooden ones in railway construction, but it is difficult to see what can take the place of sawed lumber for house building. Add to this the question of the supply of lumber for the manufacture of furniture, and the general question becomes a very serious one. Black walnut, our best cabinet wood, is already at famine price, and will soon cease to be obtainable at any price. Even basswood is becoming scarce. Cherry, white ash, white-wood, chestnut and butternut are not very abundant, and they can never fill the place of the walnut. In the absence of this, probably our best furniture woods are black birch and birdseye-maple, but these also are not plentiful. Swamp elm will for a time fill a useful place in cheap furniture, but the outlook generally is discouraging. The serious nature of the case is in this, that many years must elapse before the evil can be undone, even if the most vigorous measures were taken for its removal. The inertia of human nature stands in the way of individuals making great efforts to secure a benefit of whatever value if its enjoyment is to be long deferred, while with corporate bodies such as railway companies, the directors have to show the best financial results annually, and their constituents would be very impatient of expenditures the returns from which can only be realized in the next generation. Yet the importance of the matter is such that railways should certainly enter without delay on the work of planting groves and blocks of timber. It should occupy the attention of Dominion, Provincial and municipal authorities, and efforts should be made to wake up every owner of a farm or large tract of land to the pressing necessity of tree planting. It has been suggested that railways should have rows of trees planted along their lines, but the value of this may be doubt-

ful so far as their being snow guards is concerned, the right of way being too narrow; but in exposed positions, if the land required can be procured, thick groves placed farther from the track would afford protection from snow-drifts.

Every farm should have a timber reserve for fuel and other purposes. Trees should be planted for shade and shelter near the farm buildings, and wind-breaks should be provided. In many cases the timber reserve may be made to serve as wind-break also. I now venture to offer some recommendations to which I ask the earnest attention of the Association. I would not advise the scattering of trees over a farm to give it a park-like appearance. Let those who have land and means to spare to do so produce park scenery, but for farms generally I suggest something more practical. I recommend that every farm should have a wide, thick belt of trees, either reserved from natural growth or planted, on the side of the lot most exposed to the wind, and that if fenced fields are to be continued in use, groups of trees to afford shade for cattle should be planted at the principal intersections of these.

2. I ask for the abolition of the present very expensive and unsightly system of fencing. It would be much better and cheaper for all to fence in their own cattle than to fence out those of everyone else. Wire fences banished, trees should be planted along the lines of public roads, which would at once bound the lots, beautify the country and make the roads more pleasant for travelling.

3. I would ask for the beautifying of the homestead by judicious planting of both fruit and forest trees. Of course I do not mean to recommend (what I have sometimes seen done) an entire removal of every vestige of natural growth, and then planting two straight rows of such abominations as Lombardy or Balsam poplars from the gates by the roadside to the front door of the house.

4. The whole subject of forestry should be taken up and systematically studied by the Dominion and Provincial Governments. A careful survey of the whole country should be instituted, and those portions mapped in which the laws of nature require the existence of forest. Then, as far as practicable, large tracts of the original forest should be reserved and settlement excluded from them. The principal purpose in view should be to make these reserves at the head waters of river basins so as to affect the flow of the water along with the general production and saving of timber. Many other desirable results would follow, which need not be discussed here. The Association might properly urge this matter on the attention of the Governments of the Dominion and of Ontario. The Dominion experimental farms should go into extensive testing of many varieties both of forest and fruit trees, to ascertain what sorts are best adapted to several localities as regards climate, soil, etc., so that the public may be guided to a correct selection.

5. Planting should be begun with well-known varieties of value. In the Lake Erie region, the walnut, chestnut and tulip tree, with others, should be tried. In other localities groves of larch, spruce, maple, birch, hickory, ash, elm, cherry, beech, oak, pine, hemlock and cedar, may be tried according to circumstances. Especially valuable, it seems to me, would be larch, spruce, pine, maple, hickory and cedar for this purpose. A belt four chains wide, quarter of a mile long, would cover eight acres, a half mile, sixteen acres. On every farm there should be a reserve of sufficient extent, probably not less than from twelve to twenty-four acres. The position of this will be determined by local circumstances. If entirely new planting, it will be influenced by hill and valley, wet or dry land, stony or rough land, etc., but wherever practicable it should be so placed as to afford protection against stormy winds. It should be planted very thickly to induce upright growth, and after some years a periodic thinning out would be a source of profit, while the main harvest was being waited for. The cost of such plantations would no doubt be large in the cost of the trees, the preparation of the land, the planting and several years' cultivation, but it would be money well spent, and it would add to the value of farms much more than its cost. The work would of course usually be spread over several years. I cannot take up your time by dwelling on the resulting benefits, but if such planting became general, farms would be enhanced in value, protection would be afforded to animals, to gardens and orchards, more moisture would be retained in the soil and the air, and gradually timber would be provided for fuel, building and railway uses, and the whole country would be improved and beautified.

Mr. GROVER.—I fully concur with everything Dr. Bell says there. He takes up the matter exactly as anybody should. The recommendation to look after the wood we have got on our farms, and to look out a proper place to put more wood, not only to preserve our own wood but the wood in the hands of the Crown, is not spoken of a bit too soon. I think that remark would apply to the farmers of Prince Edward. I heard some farmers were cutting down the hickory trees on their farms. I sent down for hickory nuts, and I found the man I got the nuts from is the man that was cutting down the hickory trees.

Mr. BOULTER.—I was talking with my brother about preserving wood on his farm. "Why," says he, "one growth of grain would pay for twenty years growth of the wood there." If all were of that opinion we would soon have very little wood. I have taken a great deal of pains in planting out trees on my farm, and the farmers around here have done so, making it a very desirable road to travel. We had a very serious wind here two years ago, and a great many of our best maples were blown down—so much so that the price of wood dropped down very much. Many fine maple groves were completely blown down. I have noticed that where trees have been cut out and the cattle allowed to run the trees die off very rapidly, the maple particularly, and we should plant out more trees than we do. Unless people take action, the Government should take action as recommended in the paper. Any who have travelled to the Western States particularly would see the beneficial effects of planting out trees; and even in our North-west last year in some places they were planting out, but they have not had the chance or time there to do it on an extensive scale.

Mr. CASTON.—The Government have already done this much in the matter that you are allowed so much of your statute labour for every tree planted. The tree requires to be three years old, and you are allowed twenty-five cents for every tree. In our section of the country we have planted rows of maples, and we intend to string wires on these trees for fences. I think the Government should take further action. It is a question whether the lumbermen have been a great blessing or a great curse to this country. They circulated a great deal money in the early days among the farmers, and made a home market for the farmer's produce, but they have destroyed a great many forests, and coming down your bay here yesterday I noticed that in every place there is a saw-mill, so I presume your forests are disappearing rapidly. There is a great deal in what Mr. Phipps has said about the want of timber having to do with the drouths. There is a great deal of land that is sold for taxes where the lumbermen have gone over it and taken the lumber off it and are not paying the taxes. I think it would be nothing but right that the Government should expropriate that land and let it be planted with some kinds of timber, and let it become Crown lands again, and, when it became valuable, sell it again.

Mr. MORDEN, (Picton).—We have seen the effects here in this county where the farms are laid out to run north and south, one hundred acres a mile long, and an eighth of a mile in width. They have cleared the land by leaving the timber at the north and south extremities, and this allows the west wind to drive through and sweep the country. If they had the timber along the west or east side of the farm so that it would be a wind break, it would be a great benefit to the farmer in ways mentioned here. I can remember myself when all the wheat fields in the county were winter-killed, except a little streak along the footings where the snow remained in the banks. It is a great loss that way, the destruction of timber. I know a farmer who allowed the trees to grow the whole length of his farm, and he grew wheat and he got rich while the neighbors didn't get along. Now one neighbor has stimulated another, so that the whole township has planted trees along the roadside. In another township north of this you would find very little planting. I have observed, in travelling through the country, one large tree in a field, and all the cattle gathered under it from the hot sun on a warm day for shelter, and perhaps the next winter there would be a great deal of snow, and they would go and cut that tree down; and many times I have seen cattle suffering from the heat and from the flies. Such conduct lessens the success of the stock raising, the animal would not give nearly so much milk by being exposed to the sun and flies without any comfort or shelter.

Mr. BOULTER.—I heard one farmer say he chopped down his trees because the geese were lying under them when they ought to be eating. (Laughter).

Mr. MORTON.—I have seen a beautiful elm planted along the roadside, and farmers would go and cut down the elm because they didn't consider it a valuable tree, and perhaps it was the most beautiful tree on the roadside. Even in the winters you find them destroying trees along the roadside for firewood because they had not access to their fields.

Mr. GIBB.—In the spring of 1879 I planted about a thousand trees to test a timber plantation. My object was to see which were the best trees, the native or European species. I planted them side by side, three and a half feet apart each way, but I planted them in such a way that if I had to thin them afterwards to seven feet each way I would have a certain amount left of each kind. I found our white pine a little better grower than the Scotch, and better than the Austrian pine. I found the Norway maple a little faster grower, though not always perfectly certain of growth, than the hard-leaf maple. The ash-leaf maple failed because I got a Southern form of it, and it was not hardy. The European larch was a better grower than our native tamarac. It is too soon to say which is doing best; a number failed. I think the best field trees I have are the European White Birch and the Silver Poplar of Europe. The Silver Poplar is a rapid grower, and it has suckers, which are a good thing in a forest tree. It has a better quality of wood than the other poplars. But for any other purpose than field it is not much use, because you can't get a straight stick off it. A perfectly straight stem like the mast of a vessel we have not got in this country. Though Prof. Budd, of Ames, Iowa, has imported a good many, he has not imported that, because I have looked at all his poplars and they all wobble. The Yellow Locust is not perfectly hardy. If it was it would be the best for fence posts.

The SECRETARY.—Mr. Gibb has spoken of the Yellow Locust, and just here I think it would be very interesting to know just where it will grow, how far north it may be grown. He said it is tender with him. I have noticed a gentlemen, Mr. Hicks, of Rosslyn, Long Island, speak of it in a forestry report as to its value for fence posts. He says he knew of posts three inches through lasting thirty years. That would be a great durability. He states that it would be very valuable as a tree to grow for profit. You can grow some twelve hundred per acre, and at twenty-eight years of age they would produce from two to four posts each and these posts would be worth fifty cents each; that would be a total yield of over \$2,000 from an acre.

Mr. CASTON.—Was this in Ontario?

The SECRETARY.—No, it was on Long Island. Where we can successfully grow these locusts, they would be a very profitable tree. In Grimsby the Pseudacacia or Yellow Locust is not affected by the borer in the least and it is perfectly hardy. I have some trees of it planted some fifty or sixty years ago, and they are about seventy-five feet high, with trunks over eleven feet in circumference. They grow faster than any other tree I know of.

Mr. GARDNER.—Thirty years ago this spring I set a Balm of Gilead, and it is now over three feet through.

The SECRETARY.—Do you know the value of that wood here?

Mr. GARDNER.—It is worth about \$15 or \$16 a thousand—about the same as basswood.

Mr. CASTON.—There is another tree that has not been mentioned here to-day, that is the white ironwood. Carriage makers are now using it in preference to hickory for wheels. Second-growth white ironwood makes better wheels, and you have to pay three or four dollars a set more for them. It is a very slow grower.

The SECRETARY.—The locust tree is used for the same purpose, and is ever so much faster a grower.

Mr. CASTON.—For wheels?

The SECRETARY.—Yes. The yellow locust is used for wheels, not the clammy locust, which is a much smaller tree and often riddled by the borer.

Mr. GIBB.—There is a great difference in the hardiness of the locust. Mr. Beaver, of Milwaukee, had some trees that he sent to Dakota. They had proved perfectly hardy there, but whether it was in Central Dakota I don't know. The tree is certainly long-lived.

in many instances, for that which is said to be the first tree that was carried from this country to France is still living in Paris, and it was planted about 1680. I do wish we knew where we could get the seeds from the northern limit of this yellow locust and the *Platanus*, the Plane tree. I have a Coffee tree I got from Rochester. It sometimes goes back six inches, and in other cases it is quite hardy. There are a number of trees which, if we can only get them from their northern limits, are hardy and will stand our exceptional winter; but if we get one that will stand only our ordinary winter, some day when we get an exceptional winter they will fail.

Mr. GARDNER.—We have any amount of this seed, and it is flying all over.

Mr. GIBB.—I don't want to get it from here; I want it from some higher limits. We are continually getting seed from the southern limits. Another thing: I wish we knew where we could get the nuts, for planting, of the sweet hickory, that is, a selected sweet hickory of the largest size and thin shell.

Mr. GARDNER.—Come here in the fall of the year and we can furnish you any amount of them.

Mr. MITCHELL.—Is the Plane tree you mention sometimes called the sycamore?

Mr. GIEB.—Yes.

Mr. CASTON.—There was a tree sent out three or four years ago, the *Catalpa Speciosa*, by the Association. Have any members got it growing? There is a specimen three years old where I am living—a very remarkable tree, nine or ten inches across, which has very large leaves and looks very well.

A DELEGATE.—I have had one three or four years; it is perfectly hardy.

The PRESIDENT.—The tree is perfectly hardy in the Province of Quebec. Mr. Gibb has several.

Mr. GIBB.—I would not say hardy. The wood is often rotten on the inside, and I have lost a number of them. It shivers during winter. For a climate a little milder than Abbotsford it is all right.

Mr. MORTON.—Last summer we saw a number at the English Church clergyman's place in Collingwood, and they were perfectly hardy there.

WHEN AND HOW TO CULTIVATE THE STRAWBERRY.

Mr. HILBORN.—The method that I generally adopt is to have the ground well prepared to plant as early in the spring as possible in rows about four feet apart, and a foot apart in the row, and to keep the runners cut off up to this time, and to thoroughly cultivate as near the plants as possible without interfering with the roots; and the little space you can't reach with the cultivator go over with the hoe, and weed out with the fingers any weeds growing close to the plants. Constant cultivation, constant stirring well is what they require early in the spring and about the middle of this month or a little later. If you let the runners begin to grow they will form a narrow matted row by fall; and continue the cultivation through the whole season. Then in the fall, as soon as the ground freezes two or three inches deep, cover the places between the plants with wheat straw. It is very important to get the straw between the rows and to place very little over the plants. If there is much over plants and heavy snow falls during the winter, they are almost sure to be smothered. Early the following spring, when growth begins, part any straw from over the plants, draw it towards the centre of the row so as to give them a free chance to come up, and leave it there until the fruit is gathered. After the fruit is gathered, if you want to continue them the second year, you have to remove the straw from the tops of the plants and cultivate up between the rows again; narrow down the rows a little, make them considerably narrower than they were the previous season, and let them grow again in the same way; but I think, as a rule, it is more profitable just to take one crop and plow them under. In that way you grow better fruit on the first season, and you can also grow plants to supply your plantation. If you keep it up two years you run out of plants, as the plants that come out of the second

season are not so good. It is better always to take plants from newly planted plantations ; they are more vigorous and seem to do better. I think that is the reason why the old Wilson has been running out. People use the little weak plants of the second year's growth ; they will use those plants to replant again, while if they would take plants that had never borne fruit and dig up the old rows so as to get good, strong plants, there would be no danger of the varieties running out.

Mr. MORTON.—Do you give them no spring cultivation at all ?

Mr. HILBORN.—Well, that is a matter of fancy ; it depends a good deal upon the circumstances. If the season is likely to be a dry one it is better to remove the mulch and cultivate and then apply the mulch again ; but that means a good deal of labor.

INTRODUCTION OF RUSSIAN FRUITS.

The next question was : What has been done to introduce the hardier varieties of fruits from Russia ?

Mr. GIBB said : The time will come soon when I can report from my own orchard. We have got to have our reports from different lines of latitude. Prof. Budd, of Ames, Iowa, in latitude 42 or $42\frac{1}{2}$, will not be a guide to me at Abbotsford, in latitude $45\frac{1}{2}$. I can only say I have got now something over a hundred varieties of Russian and German apples in my orchard, and I have got in one instance the same thing from five different sources in Russia. There are many mistakes, but we are trying to reduce the mistakes to the lowest possible number. The first is the early Thaler, or Yellow Transparent. This is an early apple, fit for table on the 25th of July. It is riper and better of course a week or so afterwards. This is the earliest fruit I have. Then there are a lot of others. Longfield is a very awkward tree ; it is a weeping tree, in fact, but it is very young bearer and a hardy tree. The fruit is not suitable for shipping, and I don't think the tree is one of the hardest, but I must say it is quite a success with me at Abbotsford. I had some three bushels of the fruit last year and some the year previous, but the tree is very young. It is an unusual bearer considering it is making a fair growth. I have seen one or two varieties in the west that are doing remarkably well. One was Golden White a fall apple, but a very good producer, and hardy. Another one I like very much, a bright, glossy little apple, with white flesh, is an apple called Raspberry. It comes in a little after Early Joe.

Mr. HILBORN.—Do you know anything about MacMahon's White ?

Mr. GIBB.—No, except that it is getting a very good name for hardness in the Northwestern States. I must say a large number of these Russian trees are remarkably promising ; and I think your President will bear me out in saying that the most of them look very healthy.

The PRESIDENT.—Very healthy. I never saw finer.

Mr. CASTON.—Can you give us the name of any of these Russian apples that are long keepers ?

Mr. GIBB.—No. I can give you other people's opinions. When you get into the southern part of Russia, where grapes like the Concord would ripen year after year, they fall back on the German late keepers. That is not a question we went to Russia to look up. We kept entirely out of the grape growing regions when we went to Russia. In the opinion of Prof. Budd the longest late keeper is the Pointed Pipka.

The PRESIDENT.—Can you suggest anything that this Association could do to promote such experimenting ?

Mr. GIBB.—Yes, I would like to see your north frontier counties test these. Reports from Abbotsford ought to be useful to your northern latitude. Many of them won't be failures ; they are going to be fair bearers, hardy trees, and produce a fair quantity of fruit. I don't say they are going to be long keepers, but they will be worth trying. Then of the Russian pears, there are one or two that I think will be useful where you can't grow ordinary varieties and where the Flemish Beauty begins to fail. I am a

little afraid of these pears for growing in climates where you can grow the Concord grape, and ripen it thoroughly, because there they are very apt to rot at the core. They are much more likely to rot at the core in a climate like this than in Russia ; you have so much more heat. Some Russian pears are doing very well with me, but they can only be looked upon as a fruit for cooking. One thing I am sorry for, and that is, that the plums of the Volga have not been imported in this country, and are rather difficult to get ; because they are growing in little peasant villages that would not understand correspondence. The cherries I have more hopes of, but most of these cherries color some little time before they are thoroughly ripe. They are acrid and astrigent a little bit when first they begin to color, but when thoroughly ripe they are sweetish rather than acid or sub-acid, and they are very nice indeed, but they must be protected for two weeks, and if not the birds will have them instead of ourselves.

Mr. WRIGHT.—Which variety is that you are speaking of?

Mr. GIBB.—Several varieties called Vladimir. Some are weeping in form, and some are upright. Some have dark-colored flesh, and some have light-colored flesh. The cherry that is going to be most successful with us is what they call in Central Europe the purple-flesh Morello.

Mr. HILBORN, (Ottawa).—My experience is of a short duration. I am not able to give anything of much value at present. We tried a great many varieties, I think about two hundred varieties of north Russian apples, and perhaps seventy-five of pears, fifty of cherries, and forty or fifty plums, we got the first of them a year ago this spring, and the balance this season, so that our experience at the Experimental Farm is so short that it is of very little value. We hope to be able to give you some results later on. We got some of them through Mr. Budd and Mr. Gibb, and some from Washington, and some from other sources.

UTILIZING WOOD LOTS FOR PROFIT.

The next question was, How can a natural wood lot of Beech, Maple and Elm be best utilized for profit ?

The SECRETARY.—I think that Mr. Caston might reply to this question so far as the maple is concerned. He has been utilizing the maple woods to pretty good advantage, as we can see by the fine samples on the table before us of maple sugar and maple syrup.

The PRESIDENT.—We will take the next question in with that, What profit may be derived from an acre of hard maple by sugar making ?

Mr. CASTON. I would very much regret to have a spring go by without making some syrup. I consider maple syrup one of the greatest luxuries we have, because it is the purest of saccharine matter, and the sugar we get from maple is the purest sugar under the sun. As to the other kinds of timber, I don't know how you would best utilize the elm and beech ; but I regard the maple as one of the most useful trees in Canada ; and I think when they took the Maple Leaf as the emblem of Canada they did a very good thing. The maple is useful not only as a shade tree ; it is the very best of fuel, outside the use of the wood as timber for vehicles that have to carry heavy loads ; it makes good, stiff axles. Most of the carriage-makers in our part of the country have always used it for axles ; and we most of us know what beautiful furniture some kinds of maple will make. It is a beautiful shade tree ; for growth it is hard to beat it ; and among our deciduous trees I don't think we have anything that looks nicer than the maple, and it is not very long in growing to quite a size. With regard to maple syrup, we make it out of our original woods. Any trees that blow down we use for fuel, but we leave the maple standing there, and tap them in the spring. This last spring was a very favorable one and we made a large quantity. I have about five acres of land in maple trees and on this area about five hundred trees far enough apart to grow to nice size. Some of the largest ones we had two buckets from, and we made about two hundred gallons of syrup.

The SECRETARY.—What profit would there be per acre in making syrup ?

Mr. CASTON.—Out of four or five hundred trees you would make, in a favorable season about two hundred dollars worth of syrup. It is not merely the value of it, but the luxury ; you get it long before fruit season, and you make it in the slack time when you are not doing much else, so it does not take valuable time.

The SECRETARY.—Counting the labor, would 500 trees yield a profit of \$200. ?

Mr. CASTON.—The labor is not much, because it is done without hiring hands. Of course it would cost something for the outfit ; that is, tin buckets cost about twelve cents apiece. The faucets cost a cent and a half, etc. The hole in the tree should be made 9-16ths of an inch. The old custom was to make a great gash with an axe ; that in a very short time ruined the tree, but now it is found that this little instrument will get as much sap out in the course of a season, and more than we will by the use of the axe. The axe will cause more to run for the first two or three days, but then it will dry up. This mode will cause it to run all the season. We use a bit to bore with. With this there is not a drop wasted. There is no farm but might very well have a few acres in maples. Almost every farm has an odd corner where they might have them. Five acres would hold about 500 trees, and off that quantity of trees when grown up, you can make from 150 to 200 gallons of syrup in a season without a great deal of labor.

A DELEGATE.—What about the boiling. ?

Mr. CASTON.—We use an evaporator ; there are thirteen apartments in it, and the raw sap runs in at one end, and the syrup runs out at the other, not finished up as it is in this can, but very nearly as good ; with a very little finishing up in the kettle it would be like this. I venture to say that there is more sweetening in this maple sugar to the pound than there is in any other sugar you can get, no matter where you get it ; and it is more wholesome. More than that, I have to say that this syrup in the spring of the year, acts as an alterative on the system, and if you have a cold there is no way in which you can cure it quicker than going into the bush and drinking lots of this hot syrup. These trees on waste land would be a very profitable investment. You can put them in a place where they would act as a wind-break and as a shelter, and utilize it in a great many ways. The sap as soon as it runs should be manufactured as quickly as possible. The quicker you can manufacture it into syrup or sugar the better, not letting it stand any longer than you can help. This is the way we have it fixed : we have a trough with a strainer in the trough, and it runs from that into the evaporator. There is a continuous flow all the time. It is very clean, because we get it in tin buckets, and scarcely any dirt gets into it.

Mr. WRIGHT.—In the County of Leeds, which is further south than we are, the maple trees are much more productive than they are in our section. There is a man named Smith in Harlem, and I purchase every year from him a thousand pounds of maple sugar. I gave him ten cents a pound for it, and he tells me that he makes more out of his sugar bush than out of any other part of his farm. He makes it when he has very little else to do, and he makes it by the same process as Mr. Caston.

Mr. DEMPSEY.—Did you ever try to make sugar out of the sap of the butternut tree ?

Mr. CASTON.—No ; I have heard some of the old settlers say they have tried it years ago out of pumpkins, but it was such a slow business that it was far better out of the maple. This is the first time I ever heard of the butternut.

Mr. GIBB.—I have an impression that the sap of the butternut is not much less strong than that of the maple, only the trouble with it is that the bark is bitter, and the old-fashioned way of cutting it with an axe made the syrup bitter ; but with these little taps that would be avoided. You could not make a syrup that would crystallize, but you could make a good syrup. If you are planting the maple as a sugar tree along your lakes, where you have not the alternate freezing and thawing that we have inland, you may not have sugar seasons. You might have bad sugar seasons in that case.

Mr. DEMPSEY.—I have a neighbor who taps butternut trees. I have never seen the sap or tasted the sugar, but he told me it ran more than the maple and made a better quality and brighter sugar than the maple tree.

The PRESIDENT.—Have you ever made use of the sap of the native birch ?

Mr. CASTON.—Only for vinegar. They are the greatest trees to run I ever saw ; they would run themselves to death if you would let them.

Dr. MORDEN.—I have seen sugar made from it.

Mr. CASTON.—I never did ; there is a very small quantity of saccharine matter in it. With regard to planting maple for that purpose, a low, damp place is the best. There is another little wrinkle about it ; the deeper you tap your tree the better the color of the syrup will be.

Mr. GIBB.—The soft maple also makes sugar. The white birch makes sugar, but you have to boil it a long time because the sap is so very thin. The yellow birch makes sugar, and the sap is stronger and needs less boiling ; but our Indians at Caughnawaga make a certain kind of sugar. It is not crystallized, and it is always made into little patties with the hand ; I think it is strained through a blanket or a moccasin, and that which is really genuine has always the print of their fingers on it. (Laughter). It has some flour in it, and it is made of yellow birch and hard maple and soft maple and butternut all mixed up together. It is not bad. (Laughter).

At 5.30 o'clock the meeting adjourned till eight o'clock in the evening.

A NOTE ON FRUITS.

The following letter from Mr. P. E. Bucke, of Ottawa, was read by the Secretary :

I had hoped to have been able to visit you at this time, but my chief having been obliged to absent himself on sick leave I have been detained to do duty in his place. I could not allow the meeting to assemble without a few words and a small contribution in fruit.

I send some samples of the Conn gooseberry which I much regret is still lying in a partially dormant state, as it has never been propagated and placed on the market, yet it stands to-day without a rival, for size of fruit, and as an absolute mildew proof plant. Mr. Conn the proprietor has offered the right of sale of the whole stock of four hundred plants, for the sum of one hundred and fifty dollars. I also send some Downings picked on the next row six feet apart to show the difference in size at this season when neither have come to their full growth. The Conn has so often been described in our paper and reports by myself that it is useless saying anything further about it. The Secretary has two or three plants if they are yet bearing, he can speak of it also.

I send some Fay's Prolific currants, Moore's Ruby, London Red and Red Cherry, all red currants, as samples of small fruit grown by myself. They are not ripe, but they are a fair size and show what can be done by the haphazard cultivation they receive from my own hands on very light soil. On heavy well tilled rich soil they could be vastly improved, and yet the small fruits are despised by many, and are only cultivated by the few. It has been wisely said "he who gives quickly gives best." It is so with the small fruits ; in one, two and three years any of these may be brought to perfection. There are nurserymen in almost every town of any size in Ontario or parties who have plants for sale, many people give them away. A prize is offered every year of some fruit with our own paper, the *Horticulturist*, from these with a little skill in a few years the fruit garden may be stocked, whilst the paper gives direction for cultivating them.

There is no reason why almost everyone should not have fruit of his own raising, if he has not the fault lies with himself, and he has himself only to blame. The time required is slight, the price to be paid for plants is nominal, and the crop, if insect enemies are warded off, is certain.

PARIS GREEN FOR CODLING MOTHS.

The PRESIDENT.—Have we any apple-growers present who are confident that spraying the trees with Paris green is a remedy for Codling Moths?

Mr. DEMPSEY.—If you use Paris green too strong it will destroy the foliage of the apple, and it only requires caution. A teaspoonful to a pailful is sufficient, and it will destroy the Codling Moth or any other insect if you apply it in season. I think every person who has tried it will endorse those sentiments.

The SECRETARY.—I have been trying it every year for some years past quite extensively. I every year compare parts of the orchard where I omit spraying with those parts that I spray carefully, and I observe the great difference. This year I left two acres of orchard where the ground was covered with strawberry plants, wholly unsprayed. I sprayed the whole orchard that was accessible very carefully with a large force pump, fixed in a waggon. I have been observing very particularly within the last week or two the part that has been carefully sprayed, comparing it with that small portion which I have left without the application of the poison; and where it has been well and carefully done the apples are clear; I could scarcely find any apples that are affected by the moth, whereas in that portion where I omitted to apply the poison it is quite easy to find them, so I am more than ever convinced of the effectiveness of the application. I am expecting fine clear fruit all through the orchard where I applied the Paris green.

Mr. CROIL.—How often did you apply it?

The SECRETARY.—Only once, except that we had been at it only three or four days when there came a heavy rain, and we had to do that much over again. It needs to be done early—I think very soon after the bloom falls—as soon as the apples are well formed. Two applications would be more effective than one; the second one about a fortnight after the first. I notice that it is not merely in the blossom end that the egg is deposited; it is on the side of the apple as well. If you will observe you will find there are fully as many apples stung on the sides as on the end.

Mr. DEMPSEY.—Is that by the second brood or by the first? I notice the second brood almost invariable deposit their eggs on the side of the apple, while the first brood deposit theirs on the calyx.

The SECRETARY.—The second brood would not be so early, they do not appear until about the middle of July.

Mr. WILLIAMS.—I have been working with Paris green for seven years. This year I have used nine pounds. I have used it largely with water, with lime, and with plaster by dusting. Where I use it heavily with water I prefer to dust the trees with lime afterwards. The foliage is not injured, and with plum trees particularly I put one-half a teaspoon of Paris green to a pail of water, and use three applications to the plum trees. By the use of slackened lime directly after the trees are wet it keeps them fresh, vigorous, and a lively green color. Last year I had plums trees that only had a few blossoms on, and I sprayed them and saved the fruit. I sprayed the Duchess of Oldenburg that stood near the house, from which for nine years I had never gathered one apple. I gave that tree three applications of Paris green, with about one-third of a teaspoonful of Paris green to a pailful of water. That year I put up three barrels of apples. The next year it failed. The next time I sprayed it I put up four barrels of apples. I would spray one side and not the other; where I sprayed it I would get fruit, and where I did not I got none. Last year we sprayed nearly the whole orchard, and this year we have gone over the whole of it. They are very clean and fine so far. I don't see any spots or worms on them.

Mr. PETTIT.—How soon did you spray your trees?

Mr. WILLIAMS.—I began before the blossom dropped, with both apple and plum.

The SECRETARY.—Would you not kill a good many bees?

Mr. WILLIAMS.—I never noticed any fatality to the bees.

The PRESIDENT.—As soon as the fruit is fairly formed you begin.

Mr. WILLIAMS.—Yes; on some specimens I noticed the blossom had been stung by the curculio, the large kind, of a steel color, and it stings the fruit of the apple as well as the plum. I lose as many Duchess apples from the curculio as I do from the moth.

Mr. PETTIT.—In spraying for the curculio, which do you destroy, the insect that lays the egg, or the larvæ after it hatches? In what way is it effectual?

Mr. WILLIAMS.—I could not say which. I spray the trees, and the fruit comes out clean, that is about all I know about it. I don't know whether it kills the insect itself or the larvæ.

The SECRETARY.—Is the fruit stung at all?

Mr. WILLIAMS.—No; the fruit is perfect, without a sting.

The SECRETARY.—Then it must ward off the curculio itself?

Mr. PETTIT.—How do you apply the lime after spraying?

Mr. WILLIAMS.—I have a duster with a handle about one and a half feet long, and I put a cedar pole in that so as to make it twenty-five feet high. I have a force pump for the Paris green, which I put on a waggon in a tank, and drive from tree to tree.

Mr. PETTIT.—How many ounces to the barrel do you apply?

Mr. WILLIAMS.—I calculate half a teaspoonfull to a pail of water, measure the barrel, and put in the poison in that proportion. In using it in the lime or the plaster, I made it about the same strength as I would to kill the potato bug.

The PRESIDENT.—I suppose your experience is that the old custom was to use altogether too much green. It requires a very small quantity, you find?

Mr. WILLIAMS.—Very small. I began very small, then continued trying it to find how much they would stand before the leaves gave way. I handle the hose with one hand, reaching the highest trees, and at the same time work the pump with the other hand.

DANGERS OF PARIS GREEN.

The next question was, is there any danger from the use of Paris green as an insecticide by absorption in the soil, or absorption in the fruit?

The PRESIDENT.—It strikes me that the one that wrote this question is the one that should answer it, Mr. Morton.

J. A. MORTON (Wingham).—I don't think there is any danger of poisoning by absorption in the soil. I believe that even if Paris green were put upon the soil in moderate quantities, that it would not reach the fruit, because the plant itself has the power of eliminating from the combination of substances such things as are essential for the growth of that plant, and rejecting those portions that are not necessary. We find that other poisonous substances, capable of thorough solution, are fed to plants, and that they have the power of rejecting the poison; those substances are not found in the fruit, because in order to obtain the fruit it would have to go to the leaves, be liberated there, and return to the fruit. I don't see, therefore, any danger on that ground. As to whether it could be absorbed by the fruit or not, I think that is out of the question. Botanists tell us that fruit does not absorb anything from the outside—that anything that goes to make it up is received through the circulation of the plant. The only difficulty would be small portions of it lodging in the calyx end of the fruit. The fatality that could have resulted from that could only be ascertained by experimenting, by examining the fruit to see how much arsenic was in the end. I think it is referred to in Mr. Fletcher's last report. Experiments have been had to determine whether any appreciable arsenic has been found in the calyx end of the fruit, and in only a few instances out of five hundred was there found any trace of arsenic, and that was in such minute quantities that a man would be liable to die in some other way than by poisoning if he ate the apples.

Mr. DEMPSEY.—Can Mr. Morton tell us whether the arsenic contained in the Paris green evaporates as it does in the pure arsenic itself? I heard a gentleman say, not long ago, that his dog ate half a pound of arsenic that had been exposed to the atmosphere, and it only made the dog better, made him healthier.

Mr. MORTON.—I have no doubt if your Paris green were exposed under certain conditions, that it might resolve itself into arsenic, and thereby be volatilized; and from what I have seen of arsenic that remained open for eighteen months, in my experience, not exposed to the wet, but in a dry place, it was quite as efficacious at the end of that eighteen months as it was before; and all I can say about that dog, is that it was a dog peculiarly well adapted for the eating of Paris green. I don't think any other well-bred dog would have that experience. (Laughter.)

SPRAYING PUMPS.

The next question was this: Two spraying pumps are spoken of in the *Horticulturist*. One has been used by the President and the other by our Secretary. We would like to know their respective merits; the cost is very different.

The PRESIDENT.—I have Brooks'. It had not been used much before I left home.

The SECRETARY.—This is something like asking me which is the best instrument, a hoe or a plough, for cultivating the ground? It depends on what you want it for. The two pumps are for wholly different work. One is a large pump, and the other is a small hand pump for use in the orchard. The pump that is made at Oakville, which resembles the Field pump of Lockport, is the best I know for orchard use. It will send a spray from the wagon over the orchard tree of any size. The Brooks' Champion, which is also referred to, is the best one I know of that I have tried for the garden and for small trees. It will send a spray perhaps twenty or twenty-five feet very nicely, but it is only adapted to be used in a pail, not for a tank or barrel.

The PRESIDENT.—They have an attachment to it where it is used in a large tank or barrel.

Mr. HILBORN.—Does this pump throw a continuous stream?

The PRESIDENT.—Yes.

Mr. CROIL.—How many trees would you spray with the Oakville pump?

The SECRETARY.—I never counted, but as fast as you can walk along with a horse. I have a man driving who works the pump, and another man who works the hose. The work is done almost as fast as a horse will walk along, stopping a minute or two at a tree.

OUT-DOOR ROSES NAMED.

The next question was, name the five best roses for out-door cultivation, giving the reasons why they are given the preference.

Mr. MITCHELL (Innerkip).—It is rather a hard matter to decide which are the best roses. I find that beginners very often don't value to the same degree the same roses which we old growers do. Beginners generally choose some extreme of color; they prefer a very dark rose or a very light one. Old growers prize continuity of bloom as of more value than perhaps some extreme of color. On my way here I spent two days at Ellwanger & Barry's, at Rochester, and I there made a note which coincides with my own experience as to which were the most valuable perpetual hybrid roses. I have marked a doubt whether Victor Verdier or General Washington should be placed first. The Washington possess no fragrance, but it is a most continuous bloomer. We can get good blooms, I believe perfect blooms. I believe General Washington has been the means of getting me more prizes on roses than perhaps any other rose. It is a first-class free-blooming out-door rose. It is red—not very deep or very brilliant in color, perhaps, but old rose-growers value it very highly indeed. The Victor Verdier is also another perpetual blooming rose. We get blooms all the season till the frost prevents them blooming any longer. The Victor Verdier also is not fragrant. As some one has remarked, it is very hard to get the whole round of perfection in anything, and some way these very valuable perpetual bloomers lack something. They generally lack fragrance. I find I have placed next on the list La France—a hybrid tea-rose. It possesses fragrance in addition to its many other qualities of value, but in our rather harsh, dry atmosphere, it sometimes does not open freely; but La France is a very valuable rose, not only for out-door cultivation but for conservatory in pots. Gabriel Luizet is another very valuable rose; it is a perpetual bloomer, which, if we count it by points, is a very essential thing in a rose in this country. It is a new one. I have entered Coquet des Alps, which is such a thoroughly good bloomer that it deserves the first place in any collection of roses; and of course in making up a small collection like this we try to get over the different range of colors as far as we can, and it is nearly white. The Victor Verdier is nearly pink.

Among the very dark roses I have found the Prince Camille de Rohan to produce a very great variation. There are many other roses that are so nearly identical with Prince Camille de Rohan that I have been forced—and much against my will—to put upon some occasions several labels on roses picked from the same bush. (Laughter.)

Mr. WRIGHT.—What color is your Prince Camille de Rohan?

Mr. MITCHELL.—Pretty dark, almost maroon, not so bright as Baron de Bon Stetten at very best, but it far exceeds either of these in its perpetual blooming qualities, and they are fragrant, very useful roses.

QUESTION.—Are roses difficult of cultivation? Can you give plain directions for an amateur?

Mr. MITCHELL.—I could not give a complete formula of instruction in the matter, but I will tell you the main secret in rose-growing. The insect pests have prevented people from cultivating them. Begin before you think it is time to use insecticides. Rose-growing has been a hobby of mine for a long time—as long as I can remember; and I find the out-door rose to be one of the easiest managed plants I have anything to do with; and I only attribute my success with roses to the freedom my bushes have from all those insect pests, because everything I do, I do it before any insects make their appearance at all. People consider perhaps, that roses need some special soil or some special aspect—that they need an unusual amount of fertilizers; but I have not found such to be the case, particularly when you plant out young plants. Very often I find that too much fertilizer is used at first. A heavy fertilizing is not good for fruit growing. If you wish to fertilize do it after the plant has got established. As to soil, you must not plant roses or anything else which is to pass the winter in a state where the roots of these plants will be virtually immersed in standing water the whole winter, or the roots will perish; but where land is naturally drained or artificially drained, with sufficient depth so that there will be plenty of roots left to take up what sap they require in the spring, in almost any soil roses will do. As a preventive, I go over my rose bushes with a solution of tobacco. I get the stumps from the tobacconists where they manufacture cigars; we get them for nothing, and I suppose any of you can. Some use the chewing tobacco, but it absorbs the water more than the refuse does. I go over them with that solution just before the leaves are coming out. This is to prevent the ravages of the rose-hopper, or what is called thrip. I go over the bushes, either with the water-can or syringe. The smell of the tobacco makes it distasteful to the insect. For the rose-slug we use hellebore. Some will tell you that you have to syringe on the under side of the leaf, because the most of the day the rose-slug is on the under side of the leaf; but at night it goes forth and eats the leaf on the upper side, so if you syringe the leaves on the upper side, the rose-slug will do you no harm. I use ordinary barnyard fertilizer, and gentlemen from England, which is considered to be a particularly favorable climate for rose cultivation, have stated to me that they never saw, even in England, finer roses than mine are.

Mr. MORDEN.—What do you do with the green rose aphis?

Mr. MITCHELL.—While you are syringing for the thrip you are syringing for the aphis. Tobacco doesn't seem to be good for anything but a human being. (Laughter.)

A MEMBER.—What do you consider the best mode of cultivating and managing the out-door roses in the summer season—spring, summer and autumn? Should they be covered during the winter, and what ones?

Mr. MITCHELL.—I do very little indeed more than I have told you to keep clear of the insect pests. In the spring time sometimes I omit manuring for a year, as long as I feel that the bushes have plenty to feed upon. I find, even myself, sometimes, that I am not better for being over-fed. (Laughter.) I used to prune too heavy in the spring. You must bear in mind the balance between root and branch. The branch or foliage is just as necessary to the root as the root is to the top. I pruned at one time at the expense of the vitality and vigor of my plants. Now I don't prune much in the spring. I let them bloom out free. I prune enough to preserve symmetry, and prune out any weakly branches, but even this spring, in standard hybrid perpetuums, I had some of them six feet high, and so I had on other seasons, and I found that it adds to the root growth. I prune after the heavy spring blooming—prune pretty heavily; the roots have made their growth

to a great extent, and more than that, in the later season of the year roots are not so easily affected. When the ground is wet you can far more easily kill the root than when it is dry. When it is near the winter a waggon-load of evergreen branches will go over a large lot of roses. Cedar is the best. Hemlock sometimes will drop its leaves, but cedar will not. For protecting roses there is nothing like placing an evergreen bough on each rose plant. Pea-straw is a bad thing. Manure is very bad; you kill your plants by over-protection. Give them a certain amount of food; give them a fairly drained soil, and there is no reason why you should not have good roses. There will be occasions when we have harsh, dry air for a period, when numbers of our roses will not open well; but you will have so many periods throughout the season in which you will have good roses that I believe after all the rose is one of the most satisfactory plants we can grow in our garden.

The PRESIDENT.—Would you cover them all?

Mr. MITCHELL.—No, especially our summer roses such as the Cabbage rose; they are very hardy, and they don't require it to the same extent as hybrid perpetuals, but still it takes very little time when you are doing the rest, and they are all the better for it. I find a great many say that they cannot bend their roses down. Well, when you find a limb that seems so stiff that you would break it, don't bend the limb; dig a little to one side of it, the root will bend and this does the plant no harm whatever. Dig down a foot or as much as is necessary so as to bend the root. I have broken or half-broken the large leading root off, so that many would suppose the bush could not grow again in the spring. It does not make a bit of difference as long as you don't break it off altogether. But the root won't break easily. In such kinds as the Baron Rothschild, we dig a bit of earth with the spade and bend it over, and put the bough on it, and it will pass the winter all right.

RASPBERRIES FOR THE HOME GARDEN.

The next question was, What are the most desirable raspberries for the home garden? Name three red and three black; and is there any desirable yellow?

Mr. SMITH.—I would name for the three red for this part of the country, the Herstine, the Cuthbert and the Turner. For three black I would name Souhegan for the earliest, the Hillborn and the Gregg. The best yellow or white that I have tasted so far is the Golden Queen.

The SECRETARY.—Don't you like the Marlboro for red?

Mr. SMITH.—In quantity I consider it a poor bearer. If I were naming for market I should say the Marlboro. I consider it one of the poorest in flavor. It is very showy, but in quality it is not there.

The SECRETARY.—You don't mention the Schaffer for canning.

Mr. SMITH.—For canning purposes it is very good. I don't know whether you would call it a black or a red.

TRANSPLANTING.

The next question was, At what age, other conditions being equal, can apple and other trees be most successfully transplanted to withstand severe cold in our more northern counties?

Mr. GIBB.—I have always dug my trees, or procured them, in the fall, heeled them in, and then planted them out next spring. I had heard it said by Prof. Budd, that he found it best to wait in spring till buds were just beginning to swell, and then transplant. A year ago I did that, and I had the poorest growth from my transplanted trees that I had for some time. I remember getting a number of budded trees; they were the

Fameuse ; I got them in the fall and heeled them in ; and in a budded tree the stem is never perfectly strong, and in heeling in a tree you would naturally take advantage of the bend in the stem instead of turning the crook upwards. In that way I could tell which side of the tree was downwards and which was up when they were in the orchard afterwards, and the side of the tree that was upwards, though pretty fairly covered with snow-drift during the winter, did not make anything like as good a growth the first year, and perhaps the second year, as the side that was down near the ground. That made me still more in favor of this heeling in. Of course heeling in needs a little care. I usually cover the stems of the tree right over with black earth. I very strongly approve of the plan of getting trees in the fall, heeling in, and then planting out in the spring.

The PRESIDENT.—What age trees would you transplant ?

Mr. GIBB.—I don't think it much matters so long as you can throw them into a vigorous growth the following year. I always plant potatoes among my apple orchard the first year, and that makes a good growth the first year, without any trouble the second year.

APPRECIATION OF MR. GIBB'S SERVICES.

Mr. CASTON, of Craighurst, here introduced a resolution embodying the sentiments of appreciation of Mr. Chas. Gibb's services in the interests of Canadian fruit culture, which were felt by the members of the Fruit Growers Association of Ontario, the original copy of which has been mislaid.

Mr. WRIGHT.—I am very glad to be able to second that resolution. If any man in Canada or on this continent has done anything worthy of praise for the introduction of hardy fruits, it certainly is Mr. Gibb ; and if any people ought to be thankful for the work he has done it is the people who live in the northern sections. I don't know what we would do if we had not some one like Mr. Gibb. He bestows his time and his money, and he gives all the energies and everything that he has apparently up to nothing else but this fruit subject ; and I don't know where you would find a man with the capabilities that he has who would do this kind of thing. He has had peculiar advantages, and we are reaping the benefit of it, and what is better, it does not cost us a cent ; and we certainly would be ungrateful people if we did not thank him for the labors that he has given us.

The PRESIDENT.—I think it is hardly necessary for me to add anything to the resolution itself and the remarks so well made. I spent a couple of days with my friend Mr. Gibb lately, and I saw there in his grounds the result of his past labors of many years ; and to appreciate his labors thoroughly you must see the place itself ; you must see there what he has done besides what we have read ; you must see for yourselves to appreciate most thoroughly. It really is something wonderful, the work done there, not only in fruits but in forest trees, in plants and shrubs. There was only one flower missing that he should have there—one of the leading flowers of any country—in his already fine collection ; I refer to a good wife. (Laughter).

The resolution was put and carried unanimously by a rising vote.

Mr. GIBB.—I hardly know what to say, for I did not expect a resolution of this kind, and it is really very kind of you ; but, as is apt to be the case in things of this kind, I am afraid my services are overrated considerably. As to the expense of procuring these things, Prof. Budd has sent me a very large number of them. Then another collection came from Rochester, and another from Tuttle of Bariboo, and others from Ellwanger & Barry. The most of these came from the importation of 1870. That importation fell into bad odor for some time owing to the serious mistakes that were in it, but by and by in Wisconsin and Minnesota, Russian fruits came to the surface, and a number of these fruits that we have the greatest hopes of were introduced in that importation ; so that we began with the United States Government, and then those who tested these things from that importation, and then the importation brought out by the Iowa college. I have

to look these things up, and I am testing these things now ; but really, that resolution, I don't like it, because it overrates my work in connection with this matter to a very serious extent. It is meant to be as truthful as it can be, but I still don't agree with it. It is just one of these little works that has been done step by step by a large number of people, and unfortunately you are crediting me with the work done by those who preceded me. However, we are working out in Quebec things that will be valuable to you in this Province.

ORCHARDS FOR PROFIT.

The next question was, in view of the ravages of insect enemies, the rigors of our winters, and the present prospects of a future market, would it be advisable to plant a large orchard ? Would it be likely to prove a profitable investment ? Answers expected from Mr. Dempsey and the President.

Mr. DEMPSEY.—With respect to the insect pest, I am satisfied that we can quite easily overcome all the attacks of insects by taking the matter in time. The great cause of failure is that we don't commence soon enough. I think it is impossible to overdo orcharding from the fact that the demand for fruit increases at a great deal more rapid rate than it is possible for us to increase our orchards. My mind runs back some years when I first began to take an interest in apple culture. Then we thought a dollar a barrel for apples was an enormous, an extravagant price. We thought we were doing well if we got fifty cents a barrel. We thought there was nothing we could grow on the farm that would pay so well as apples at half a dollar a barrel. Now we are not satisfied with two dollars a barrel. If there has been any increase I don't see that we should be afraid of the future. As to the orchard, I say plant as many trees as you can take care of, and then stop.

The PRESIDENT.—I quite agree with all Mr. Dempsey says. I believe there is not the slightest danger of overstocking the markets we now have, if the orchardist is careful to plant only the best varieties for the particular section in which he lives—those varieties, I mean, that bring the best results as to growth of tree, cropping qualities, and market value. We find that our markets are increasing continually. We cannot keep up with the markets. This last spring, besides the British and European markets, the Western States have opened up to us. We have had our own Northwest, which has been a fine market for two or three years, and now the Western States opening up and offering a very keen competition for our best apples—offering keen competition with the British markets—offering even better prices. Many of our shippers found they made more money by shipping to Chicago, St. Louis, Nebraska, Omaha, and through Michigan we find that the Americans in the west there were shipping their own apples to us and to other sections and buying our apples, as they considered them superior to theirs—buying ours for their own home use at much higher prices than they could realize on their own apples. So that, considering that question altogether, I would not hesitate at all in advising a person to plant largely—and when I say largely I mean that which each individual can take proper care of. It is a hard thing to lay down a list of varieties that would suit all sections ; it is impossible. When I am asked for a list of varieties for any particular section, I always give a list of those varieties I consider upon the whole to have the largest value in them. Then let that individual enquire of his own neighbor, and he can judge far better in that way than I can judge for him, and find out amongst the varieties that I give him the ones that succeed best. He can always come to a better judgment than anyone else can for him.

Mayor PORTE, of Picton, after greeting the delegates, said : Were I to give you my experience in fruit growing it would not be very profitable to you. I had two plum trees, and waited about twenty years, and off one of them I got two good crops of plums ; off the other I got two good plums ; but the fruit was so good that I was every year hoping

for a crop and did not like to cut them down, until Providence saved me the trouble and the trees blew down. With roses in this county I have been eminently unsuccessful ; still I have managed to have a few. I must say I have gained a great deal of information here this evening, and I think that I will profit by it. I would bid you all welcome to Picton, and say in the words of my native land, " Cead mille failthe."

The PRESIDENT replied to the Mayor's greeting, stating that the delegates had been much pleased and profited by their visit.

The meeting adjourned at 10 o'clock till Thursday at 10 a.m., and upon reassembling at that hour, Mr. Mitchell, of Innerkip, read a paper on the following subject :

CONSERVATORIES, THEIR MANAGEMENT, SELECTION OF PLANTS, ETC.

Mr. F. MITCHELL, of Innerkip, said : I have always made this part of horticulture a hobby ; I have been nothing but a flower man. I think we could do more if we would each take some special line. There is a greater interest being taken now-a-days in floriculture. At the exhibitions you will always notice a crowd around the stand where the flowers are exhibited. It is not a matter of profit perhaps, but I don't know anything which any of us whose tastes lie in that direction can derive more pleasure from than we can from the culture of flowers. At the farmers' institutes last winter I brought up this matter of flower culture, and I found that they took great interest in the matter. Sometimes they would discuss it for a whole evening to the exclusion of other matters.

I wish to be understood as taking up this subject altogether from the amateur's standpoint, and as considering the limited conservatory of ordinary use, and one in which it is desirous to accommodate as many different general species and varieties of plants as can be grown successfully. The size must, of course, be regulated by the pocket and enthusiasm of the builder, but the smaller the more difficult to preserve an even temperature. The material of construction for the outer walls or sides is not very essential if it but be frost-proof, or nearly so, although I favor double boarding with tarred paper between. As to the style or form, and with it the situation or aspect, it should always be, for a general collection of plants, of some form of the ridge and gable plan, with the sashes sloping east and west. This gives the fullest sunshine in the morning and evening, while at mid-day the rafters and sash bars exclude a large portion of the sunlight ; consequently an even temperature is more easily maintained. I may mention, while on this head, that when attending these meetings in different parts of the province, or when travelling with any other object in view, gardens and flower-houses are always among the foremost objects of attraction to me, and that which presents itself first to my notice, with regard to the conservatory, is the matter of location and form. I find many, very many, constructed as a lean-to and situated on the south side of the dwelling. It would be impossible for a professor of the art to produce good results in such a house as this, and I believe such houses as these have completely discouraged many beginners. If I was to select an aspect for a lean-to house I would choose the north before any other, for though not suitable for all kinds of plants or for all seasons, yet many of our finest summer-flowering plants will attain a greater degree of perfection in this than in perhaps any other location or style of house. If, however, the south side of a dwelling is the only available location I would advise constructing the flower-house on the ridge and gable plan which I have already mentioned ; in this manner this location can be utilized as well perhaps as any other. My own conservatory or greenhouse has no lights in the south gable, by this I have a bench at the south end shaded from the south or mid-day sun while it receives the morning and evening sun, and at all times in the day it receives light from above ; for a large portion of the year this is the most valuable space in the house. It is very desirable, or imperative rather, in the sort of conservatory we are considering, one in which a number of different plants can be grown, to have a shaded portion as well as other sunnier positions. But I will probably make further mention of this when I take up a few of the desirable

plants for the conservatory. If practicable the house should be wide enough to admit of a raised or filled bed in the centre. Sod and new or loamy earth, with a little manure, is the best material to fill this bed with. It is not necessary to wet the sod before using as it will soon rot in the ordinary temperature of a greenhouse. Hot water is, I think, all things considered, the best mode of heating. The first cost is more than that of smoke flues, but where winter bloom is desired the result is more satisfactory; the after or running expense is, I think, not much different in the two systems, if there is any difference the hot water system is the cheapest. The first cost of the old smoke flue system is the cheapest of all, but in the winter, when but little ventilation can be given, the gas, no matter how well conducted the flues may be, more or less of which will escape, affects the blooming of some kinds of plants. The ordinary geranium is perhaps more easily affected than any other plant. I have never seen really good bloom on geraniums in winter in a house heated by smoke flues. Many other plants, however, and many of which are apparently more tender than the geranium produce the best results at any season of the year in houses heated on this plan. I am not very well posted on the steam system of heating, but cases have come to my notice where closer attention was required in firing than in either of the other systems mentioned. I know of cases where attendance is required throughout the night when the temperature is very low. Being forced to rise and replenish the fires on a cold winter night greatly detracts from the pleasure otherwise enjoyed in the possession of a conservatory. I have, however, been informed by reliable persons that the steam system can be so constructed as to retain heat for as great a length of time as by any other system. I will not pretend to make a complete selection of desirable plants for the conservatory, but will confine my remarks to only such plants as I am familiar with. For winter blooming the cineraria is particularly valuable. When intended for winter blooming I sow the seed in the spring or early summer, and after potting keep the plants as much as possible in the open air throughout the summer. A cool place with a northern aspect is the best, the north side of some building where the sun's rays can only reach in morning or evening. Care must be taken that the pots do not get water-soaked for any length of time as excess of moisture is very injurious. I notice that even many practical florists never over-water the cineraria. If persisted in the plant will first wilt and soon altogether perish. On the approach of cool weather the plant should be placed in a cool, airy position in the conservatory. The cineraria will make a finer and a far more prolonged display at this season than when brought into bloom, as it usually is, in the early spring. The Chinese primrose is another valuable winter-blooming plant. The seed should be sown in May or June, and I prefer to grow it also in a shaded place in the open air throughout the summer and removed to the conservatory on the approach of cold weather. The carnation is another particularly fine winter-flowering plant. It is not only a useful decorative plant for the conservatory but is of even more value for the lasting and beautiful cut flowers which it furnishes throughout the winter. For the best plants cutting should be struck the previous winter or spring and be planted in the open ground throughout the summer. The plants should not be allowed to bloom while in the open ground. They should be taken up and potted and removed to the conservatory in October or November. Ordinary fall frosts will not harm them. Many varieties of tender roses bloom profusely throughout the winter. Varieties of climbing habit will generally give the most bloom and are easily managed. They should be planted in the bed in the centre. I recommend the following: In whites the old Lamarque is the best for the beginner at least. It is not a rose of very high finish but is a rampant grower, is almost mildew proof and requires but little care, except such as it may require from the pruning knife occasionally. Gloire de Dijon, peach or fawn color, is a first-rate rose for the amateur's conservatory. A sweet-scented, good-sized well-formed, constant-blooming rose, and is nearly, though not quite, as easily cared for as Lamarque. In reds, Reine Marie Henriette and James Sprunt are perhaps the best among the older varieties and are easily managed. I know that amateurs are generally advised, by those who profess to be posted on this matter, not to attempt to grow that magnificent yellow rose Marechal Neil, but if thrifty young plants are selected and planted in the ground in the part of the house in which the temperature is the most even and least subject to strong draughts it will generally succeed well. I have more perfect success

with it than with any other yellow rose which I have tried. Nearly all hybrid perpetuals and hybrid teas will bloom freely in the latter part of winter. These should be grown in pots. By far the largest portion of flowering plants bloom in the spring. I will not enumerate any of these, but will make mention of a few valuable summer-blooming plants. For an early summer-flowering plant the Agapanthus is well adapted to the amateur's conservatory. Insects rarely prey upon it, and though a strong-growing, stately plant the flowers possess a delicacy and purity which exact universal admiration. For bouquets in which delicate tints are required rather than striking colors the Agapanthus is unsurpassed. Anyone can grow it to perfection. A sunny position is the best. Most of the new, large-flowered fuchsias are worthy of a trial, although I notice they are very rarely produced in anything like perfection in ordinary small conservatories. A partially shaded position, a cool, even temperature, and frequent and copious syringing is necessary to success. The comparatively new, large-flowered, tuberous Begonias are useful, handsome plants. The Chinese hibiscus is worthy of being grown far more than it is. Some of the double varieties produce blooms six inches across. The colors in many varieties are gorgeous and striking. The hottest and sunniest position suits it best. A plant which is a greater favorite of mine for the conservatory than perhaps any other is the Gloxinia. A bunch of well-grown Gloxinias in full bloom is a grand sight. Those who have seen only indifferently cared for specimens cannot form an idea of the wonderful beauty of this flower when at its best. Compare the most beautiful, daintily dressed child with the most neglected little street arab and you have not so wide a difference as there is in the extremes of this flower. I mention this matter of ill-grown Gloxinias because I see so many of them. A few natural requirements of the plant need to be borne in mind, and if so it is very easily managed. In the first place it cannot bear the direct rays of the sun. In the style of conservatory I have advised it must be grown on the shaded bench at the south end. The foliage should never be syringed or allowed to become wet in any way. The plant should not be exposed to strong draughts. If these things are attended to and a rather high temperature kept up in the early periods of their growth they are easily grown. The Gesneria is another plant beautiful both in foliage and flower. It requires exactly the same treatment as the Gloxinia. There are many other beautiful summer-blooming plants which I would like to make mention of, but it would prolong this to too great an extent. Perhaps on some future occasion, if not here, elsewhere, I will take this up where I now leave off, and then I will perhaps be able to discuss a few of the many spring and autumn-blooming plants suitable for the conservatory. In concluding this, at the present time, I may say that the most complete formula of rules for guidance, or the most approved structure or appliances will not avail much, if the possessor, or person in charge, is not a true and devoted worshipper at the shrine of Flora.

Mr. DEMPSEY.—Farmers should know that it is very much easier to grow flowers, and that greenhouses are much easier built than most people think. I used to run a greenhouse to a considerable extent. The past eight years we let it go back, but I wanted a hot-bed last spring and I partitioned off about thirty feet by ten of the greenhouse and set in a stove. You would be surprised to see what little wood it required to keep that warm. I have seen some very successful greenhouses that were built convenient to the kitchen, and simply a pipe run through from the kitchen, which furnished a circulation of hot water and warmed the little greenhouse, and the plants were kept in a very nice state. There are some houses heated by hot air in Trenton, where they have a register connected with the greenhouse, and they can maintain whatever temperature they wish, and they grow very fine plants. Those greenhouses are almost invariably facing the south, but they are certainly successful in growing plants. It is requisite that they should partially shade the greenhouse occasionally. We can produce almost any plant at the present day true to name from seed if we like and almost invariably true to color. It is much better to pay a shilling for a paper of seed than it is to pay a shilling for a plant. You would get a hundred or two hundred plants from the paper of seeds, and invariably the seedlings produce more and better bloom than the plants grown

from the cuttings. A few shillings invested by farmers in this way would pay them if they have any taste at all for floriculture.

The SECRETARY.—Do you advise crysanthemums for house culture?

Mr. MITCHELL.—I don't find people are as a rule very successful with them. I don't advise them as strongly as many plants which are considered more rare. The crysanthemum is looked upon as a common plant; it is very uncertain without its management be from skilful hands. I see that a great many fail with the crysanthemum, but still they grow it in the open air throughout the summer, or a portion of the summer, and then remove it to the house or conservatory.

Mr. DEMPSEY.—The most beautiful rose I ever looked on in my life was a Gloire de Dijon, grown in the open air, but it was planted just in front of the house, and just in front of the rose was a cellar window, and the party simply took it off the trellis and poked the bush through the window and let it remain in the cellar through the winter. They protected the roots from the frost; they threw over some evergreens to keep the frost out of the ground, so that the roots were not destroyed, and wintered it in that way.

The PRESIDENT.—You would require to take the furnace out of the cellar if you had one there.

Mr. DEMPSEY.—There are very few farmers with furnaces in the cellar.

ROUGH HANDLING OF FRUIT.

A question, which was deferred from yesterday, was then taken up—Have shippers generally the same cause of complaint as to rough handling of fruit by carriers as is mentioned on page 150 of the current volume of the *Horticultrist*?

The PRESIDENT.—My experience covers a number of years, and I know the experience of a large number of western shippers who have with myself been for years large shippers to the British and European markets; and the result of our experience has been this, after testing the matter, and after dealing with the railway companies, writing to them and pleading with them, and our steamship companies at Montreal, viz.: That we advise all shippers to act as we have done, namely, to ship all our fruit for Britain or any European country by New York, and cut adrift from Montreal entirely. We see no other remedy for it. Our past experience has been that everything we have shipped by Montreal to London direct was a matter of ruin to the shipper. We find that when they are shipped by New York not only will the line to New York handle the fruit better in carrying them, but better in transhipping it on to the vessel; and we can from any western point land fruit better in Norway or Sweden or Denmark in far better order than we can by Montreal. The balance has been largely in favor of New York; so much so that it is a clear matter as between profit and loss to the shipper. I feel, and we all feel, extremely sorry for this; we would rather do our business through our own country; we would much prefer dealing with our own lines at Montreal; but we are forced to forego that. We find that the railway companies from the line to New York will do almost anything we ask them. When our fruit arrives at Buffalo or Suspension Bridge, if it is only one car, they will run it through at express speed to the seaboard; and there it is handled promptly and carefully placed on the vessel; and almost all the lines running from New York will carefully place it in the coolest part of the vessel, and if necessary put a cold blast through the apartment, keeping that fruit in perfect order across the Atlantic. We have pleaded very hard with our steamship companies at Montreal to do the same, but they will not do it. They will scatter that fruit all around any place; where there is room for a barrel they will tumble it in. And when I speak of our railway and steamship companies in these strong terms I also include our express companies, which have acted most abominably in the handling of our fruits. They seem to take a particular pleasure in taking up a box or a basket and seeing

how far they can throw it. We put up some of our fruit in baskets with handles on so that we thought they would have to take it up by the handle carefully ; but they pick it up and pitch it to the other end of the car to see what kind of a jelly they can make of it. I am very sorry to have to speak of matters of this sort, but I speak in plain Queen's English, and I only hope that the matter will be brought to the attention and minds of these people—or to their hearts, if they have any ; and we do hope for something better in the future. In the meantime we can do nothing else than withdraw our fruits from that particular line of traffic and ship by New York entirely. We find that is the only remedy left for us.

Mr. BOULTER.—Can you get as cheap rate from New York, or do they ship it by the cubic feet ?

The PRESIDENT.—There are secrets in all trades, and there are some points in connection with that. The Grand Trunk will charge us more if we ship by New York, we find that. We have nothing but Grand Trunk in our section. We hope soon to have the Canada Pacific there ; whether that will make any difference I don't know. I thought the Canada Pacific was going to deal better with us in some ways, but we find it hard to deal with them in shipping to the North-west.

Mr. MORTON.—You will find it worse.

The PRESIDENT.—It may be worse, I don't know. From my station (Goderich) to Liverpool by Montreal the rate is 95 cents a barrel ; by New York that would be \$1.10 or \$1.15. But we found ways and means of getting over that, and I suppose I may as well mention it ; and the way we adopted was this : We did not take a bill of lading at all from the Grand Trunk ; we did not take a bill of lading from the American railways ; we took our bill of lading from the Steamship Company, and the rebate gave us, in the long run, a cheaper rate by New York than by Boston. I pleaded hard with the Grand Trunk on that very point, because it was safer to ship our apples by New York than by Boston in cold weather, very much safer, but they would not yield at all ; however, we got the best of it in the long run, and we had our fruit carried better by New York. We have asked the Grand Trunk to adopt the system of placing buffers between the cars. We find there is an immense damage done to our fruit by this continual shunting at way stations. Well, they considered the expense of that too much. They do it on the other side, the American railways, or they will send our fruit by express and not allow any shunting at all. If necessary they will turn a car or two on to an express train and run it through, or if they have enough fruit at Buffalo or any place there they will put an engine on it and make a train of it. They give us dispatch in every way. If there is a shortage at New York to the steamship company we can settle with any American railway in a week or ten days. I have a matter just now with the Grand Trunk. It is running about five months and it is not settled yet, and it is a shortage of two barrels of apples by Boston. I don't know when it will be settled—you never can tell anything by Grand Trunk.

Mr. BOULTER.—As we have an express man here to-day, I hope he will take your remarks. I have no complaint. I can load up a car of apples here, or a car of canned goods, and I can know to a cent what it will cost me to British Columbia ; but when you ship anything to the Old Country you don't know what it will pay you. They have wharfage and tonnage and dunnage. (Laughter.) I shipped last year to London, and when it got to London the fellow drew back on me for \$300. It cost thirty-five pounds to send that car from the door here to London, and it cost twenty-five pounds to take it out of the vessel and put it in the storehouse. Unless we can get some system jammed into their heads in the Old Country so that they can tell us what they are going to charge before we start, we must stop it. You don't know what you have got to pay till they draw back on you. We get a good rate now from here to Liverpool, London and Glasgow. I am sorry as a Canadian to see our stuff go by American roads. I have not got the sympathy, though, to lose money by our own roads if they won't do it as well as the others. It is a shame to see fruit handled the way it is when we pay the express company a good price for ~~price~~. I shipped strawberries to Peterboro', and I didn't get enough to pay the cases. Unless the express companies handle goods at a fair, reasonable price, and handle them

better than they do, it is not encouraging to ship them ; and I do hope that due importance will be given to that by this Association, not only that we should have a good rate, but that they should handle with care. I hope our own Canadian routes will not be cast overboard for lack of a little common sense on the part of the managers.

Mr. A. H. PETTIT.—From my experience in shipping to the Old Country I quite agree with the President in regard to the routes, for I think I understand packing fruits for the Old Country, and when I take Ben Davis and other hardy varieties and ship them in cool weather, and they arrive in the Old Country wet and slack and wasted, it must be from carelessness in handling. In reference to the Express companies handling fruit, they do handle them very loosely, but I think fruit growers are a little to blame in this matter too. Is it possible for an express company—running, we will say, one car on a fast train—to take a couple of thousand baskets of fruit, and take them on from a couple of stations in about four minutes, and deliver them in good order ? In our place the express companies have threatened to dismiss the fruit growers. As many as possible go into a car and others pass in the fruit, and we can put in six hundred baskets of fruit in four or five minutes—so you can imagine how expert we have got ; and the express company, when we speak about our fruit not arriving in good condition, threaten to dismiss us from the service. If their men handled fruit the way we do they would dismiss them out of their service altogether ; but we can't do anything else. Now we are going to adopt another plan. We called the fruit growers of three or four counties together to discuss the matter fully, and decided what we thought would be satisfactory to us provided it could be arranged with the Grand Trunk Road. That arrangement we made. They put on a special fruit train, fast freight, shelved cars, and every convenience for shipping, and they now run that train at a time of day that is suitable to arrive in the different markets where we want it, at the proper time. Last year the bulk of the fruit in our section of the country was shipped by freight. Well, we had just one difficulty to contend with, and that was the cars were too close ; they were not sufficiently ventilated in the top and in the sides. We have gone again to the road this year, and they have improved our facilities, or are going to as soon as we have sufficient fruit to require them. The doors are to be grated, and they are to be properly shielded, and the freight train run. Now, I think if the fruit growers could unite and have markets in our towns and ship by fast freight, and if all the goods arrived in the morning, it would be a good deal better for the shipper and just as good for the consumer ; while it is also better for the dealer, because when fruit comes in several times a day he can invest very little in the morning for fear of large consignments coming later in the day and he will get stuck, so that he has to buy very cautiously. I think an experiment will be made in Toronto this season, or early next season, for a fruit market where our fruit may arrive late in the evening. It will arrive in the city some time in the night, be shunted at once into the market, and there the cars will remain till so early in the morning as it is decided to open the market. Then fruit will be taken out just where it is to be sold, without all this handling and cartage and expense. If then the fruit growers look after their fruit, as we shall, and the commission men look after taking it out, it must be well and carefully handled, arrive in good order, providing the cars are properly ventilated and run in the night. I think the local shipping in this country, if the local growers would take hold of the matter, would be brought down to a system that would be very satisfactory to all. I believe that our plan is going to be satisfactory in our part of the country. Our arrangement there is to have an afternoon train for the Montreal market and other eastern points, and an evening train for Toronto ; thus we have two fruit trains daily. In reference to the Old Country shipments, I really think there is something very, very wrong in the system of shipping at the present time. On one consignment you may be very much pleased with your sales, probably the most inferior stock ; the next, of the very choicest and best, and long keepers, you will find wet, wasted, and in fact rotten and everything else. You never know what you are going to do ; it is a mere matter of speculation, and a very risky one at that. It seems as though in the shipping part of the business they are either cooked in the hold or damaged to a great extent by hand.

Mr. DEMPSEY.—I would not ship by New York at all. Sometimes our Canadian shippers handle fruit too roughly ; but sometimes we favor American institutions too

much. I was talking to a man that was selling peaches. He said, "I would pay twenty-five cents a basket for American peaches and take them with my eyes shut rather than take our Canadian packed peaches at any price with my eyes open." Do you feel suspicious that the fellow was favoring American institutions? Then let us not do that. I was cheated, badly defrauded, in shipping by New York.

The PRESIDENT.—In what way?

Mr. DEMPSEY.—My goods did not arrive as nice as they did by going by Montreal—so much so that we did not get the price of the barrel over and above the freight. We shipped some fruit to Toronto last year, and wanted to know if we had better ship by express. Why, no; ship by freight by all means; don't have anything to do with the express company; they will charge you more, and they handle it roughly. Well, we shipped those goods by freight, went to Toronto, found that the price there was not so high as it was somewhere else, and we brought it back again. Now, those goods returned to us just about as good as they started, by common freight, and the Grand Trunk treated us very well in the matter; and I am going to always praise the bridge that carries me safe.

Mr. WRIGHT.—I have been buying apples for five years from the same man in Prince Edward County. The man was trying to find and get as good a rate as he could, and he could not tell me what he would do. I said, "Go on and buy the apples and ship them just as cheap as you can, and I know it will be all right." I got the apples all right; they were right themselves every time I bought them from him, and the price was right. That was a Prince Edward County man, and they were Prince Edward County apples; and that is one of the reasons why I wanted so much to come to Prince Edward County to see these honest men that raise those apples.

Mr. DEMPSEY.—I may say to Mr. Pettit that the apples grown in the County of Prince Edward are far superior to any apples grown in the Niagara District; all he has to do is to bring his apples in the season and we will compare them.

Mr. PETTIT.—Send to our county fair an exhibit of your fruit and we will return the compliment.

Mr. DEMPSEY.—We will meet you on those terms on the first of December or late in November.

The PRESIDENT.—Speaking about the difference in the quality of our apples, there is no question at all that the Canadian apples are superior to any American or continental apples. (Applause.) The markets of Britain have proved that beyond the shadow of a doubt. You take the average of all the markets for all our varieties of apples, you will find that that average is probably about two shillings a barrel in favor of Canadian fruit—that is, that the apples of Canada will sell upon the general markets of Britain at an average, I think I am safe in saying, of fully two shillings per barrel over any others. Of course American apples from the northern States of the United States come the nearest in competition with us. Now as regards different sections of Canada there is no question of doubt but there are differences in various varieties. For instance, I don't believe there is a section of Canada that will grow the Fameuse apple equal to the Island of Montreal. Take the Fameuse and all that family of apples, and we cannot grow it in any other section that I have seen equal to the Island of Montreal; the St. Lawrence apple also. Take the Gravenstein, the King of Tompkins County, the Ribston Pippin, they are a perfect picture. Their Blue Pearmain is fine, but not equal to the Blue Pearmain grown in British Columbia, which exceeds it in size and color. In that way you will see that different sections have their peculiarities; and I find this, that if you want to get high quality, high flavor, in any of our fruits—in other fruits as well as the apple—the further north you can grow that special variety the finer and stronger the flavor will be; and that accounts for the fact that one may say in this section that they can grow an apple of a higher quality than they could in Niagara District. Take the American Golden Russet grown in the warmer sections of New York State and compare it with some russet from the middle part of Ontario, or the northern part, and you will find the apple is much higher in flavor, and the color of the apple is higher, and color and flavor go together.

Mr. SMITH.—Does not the difference in price between the American and Canadian apples depend somewhat on the size of the barrel, too ; don't we use larger barrels than they do on the other side ?

The PRESIDENT.—No, I don't think it depends on that at all, for in the Old Country I saw through their markets there, and they didn't allow for that at all. It is so much a cask—they call them casks there instead of barrels ; and they make little difference as to the size of it. For instance, the Nova Scotian barrel is smaller than ours—it is our old apple barrel. Of course we have a standard barrel under the law of Canada now, the same size as a flour barrel, but the Nova Scotians have still retained their old barrel, which is two bushels and three pecks—it is the American barrel—still they get a much higher price than the Americans do ; so that the size of the barrel does not amount to much. Since we have adopted the new style of barrel our average price is higher, but there is more competition ; we have markets now that we did not have before. The prices of Canadian apples have been greatly increasing in the British as well as other foreign markets, and we expect that these prices are to go still higher. I, however, have trouble with those charges of landing waiter dues, and harbor dues, and carter dues, and cooperage, storage, and I don't know what all ; it is as long as a lawyer's bill of costs.

Mr. BOULTER.—I got a through bill of lading made out by the Grand Trunk.

The PRESIDENT.—Upon that bill of lading it should be stated the rate of delivery ; you get your rate marked on the bill of lading delivered to such a place. For instance, if am shipping to London, to be delivered at Covent Garden Market, the rate is to be "delivered at Covent Garden Market" ; but if you don't get that rate their vessel will not very likely come up to the dock at all ; the landing waiter will go up and take the goods off.

Mr. BOULTER.—What is the word "primage" used for ? There is some perquisite that goes to the captain of the boat.

The PRESIDENT.—One kind of primage we had experience in is this ; we noticed opening a great many barrels that were evidently half full, or very little in them ; probably that kind of primage is something that officers of the vessel take advantage of, and supply themselves with what fruit they require for their own consumption.

Mr. BOULTER.—It was prime fruit. (Laughter.)

The PRESIDENT.—Yes ; and probably that was the reason they called it primage. (Laughter.)

Mr. DEMPSEY spoke of a comparison of apples grown at Owen Sound with some grown at Montreal, and the Owen Sound ones were found superior.

Mr. CASTON.—I think the apples grown in our county (Simcoe) cannot be beaten in the county of Prince Edward or in the Niagara District.

Mr. CASTON offered to show at the winter meeting of the Association a few winter apples from his district in opposition to some from Prince Edward or any other county.

EVAPORATION OF FRUITS.

The next question was, What is the cost and what the profit of evaporating apples and other fruits ?

Mr. CASTON.—I sent in that question not with a view of Mr. Boulter giving away his profits, but with reference to farmers doing the work themselves.

Mr. BOULTER.—In the last few years quite a large number of small evaporators have been made and sold to farmers. There are lots of apples that cannot be profitably sent in to the factory. They should be sliced up and bleached, and they could realise a good fair profit on them, because they could do this at home, and save drawing those apples to market and to factories and to evaporators. How to dry them has yet got to be learned by farmers. They will pick them up and put them in the bag just as they fall from the ground, and draw them to a factory, and when they get there they are

pretty well up to pumice ; whereas if they would peel these apples at home they would save them. Farmers could save a good deal of money by taking one of these small evaporators, taking pains, bleaching it out with brimstone. In answer to the question, would it be profitable for a man to evaporate apples, I say yes. I have two thousand apple trees. If I had not a factory, I would have a nice little evaporator and use up the apples that I could not sell, that fell with the wind. The help around there could peel up a good many dollars worth of apples that are now thrown away. If the farmers would do the work well they would get just as good a price as the Americans. I put them up in five, ten, twenty-five and fifty pounds boxes. I ordered a great many paper boxes from Montreal. Instead of selling them by the pound, the merchants would say, "Here is five pounds." The cost of packing is pretty heavy in a public establishment of that kind. The farmers could do that if they would get the little paper boxes. Put them in five pound boxes, lay the first course nicely ; learn to be tasty and neat about it, and you will get a real good price for your apples—much better than if you put them in twenty-five pound boxes ; ten pound boxes, however, are very nice. Oftentimes merchants would get seventy-five cents for five pounds. I don't believe a farmer can grow berries and evaporate them and make money out of them at present, because there are so many dried berries in the back counties that are picked and dried because they can't be shipped here ; and the market is generally down to about fifteen or twenty cents. Now, if you get four cents a pound for them fresh you better sell them than undertake even to evaporate at that, because it will take four pounds of berries under the most favorable circumstances to make one pound of evaporated berries, and nearer five pounds. In large cities it is done. In Rochester a man has two hundred acres and evaporates his blackberries and makes money out of them. We never could ; we gave it up.

Mr. CASTON.—The equinoctial gales in September knock a great many apples off the trees ; and they are some of the finest specimens and if you don't keep them you lose them, as apples are a drug in the market in the fall of the year ; and I think when people are a long way from the canning factory; if they could evaporate they would save a great deal that goes to waste.

Mr. BOULTER.—Thousands of dollars could be saved to the country in that way. If a wind-fall apple is cut up right away, peeled, the core punched out, put in the bleacher, and then sliced up, the bruises will bleach right out—it won't show in an evaporated apple.

Mr. CASTON.—I noticed evaporated apples quoted at about twelve to fourteen cents. I think we might take twelve as the wholesale price.

Mr. WRIGHT.—We can buy lots at ten—all we want.

Mr. CASTON.—How would that correspond per bushel with green apples

Mr. BOULTER.—The Golden Russet apple will make about four pounds to the bushel ; it will make more than any other apple. The Snow apple will make less.

Mr. DEMPSEY.—I would like to ask Mr. Boulter what is the effect of this bleaching ? It is exposing the apples to the fumes of sulphurous acid. I would ask any one to evaporate some apples and not expose them to the action of this acid, but try them natural and see if they don't have the natural flavor ; then take some apple that has been bleached and cook them and taste them ; and he will find that this bleaching process has a tendency to toughen the apple, even though you make them into a pie, the toughness remains ; but if they are not bleached the apple cooks and swells up again just as nice as it comes from the tree, and you can detect the flavor of varieties of those that are dried without the bleaching process. I admit that the trade requires white apples, and those men engaged in drying apples don't care whether the apple is a white-fleshed apple or a yellow-fleshed apple.

Mr. CASTON.—Is not this bleaching what keeps them in perfect condition when they are opened ?

Mr. DEMPSEY.—They will keep if you dry them a little better. The saccharine matter is what preserves the apple, and there is a certain amount of that which must be destroyed by the action of the sulphurous acid ; there is no question about it at all in my mind ; still I may be wrong.

Mr. BOULTER.—I was under your impression when we first started. It is the same way with hops. When I was in the hop business I went to Toronto and found I could not sell my hops. I was told I would have to put brimstone in. The brimstone is driven off almost entirely by the heat. We bleach the apple now as quickly as it is peeled. I believe that the bleaching process makes the apple softer and better than it would without bleaching. You cannot taste a particle of the brimstone, and I believe that is driven off with the heat. If the trade says, "We have got to have that kind of an apple," you may talk till doomsday to tell a man you are selling better than what he says he wants and what his customers want. If they demand that kind of apple they have got to have it.

GROWING AND DRYING CORN.

Mr. W. R. Dempsey, of Rednersville, contributed the following paper:

One of the most encouraging crops in our country to-day is corn, and yet heretofore but little attention has been given to its cultivation. Formerly it was grown for feed exclusively, but the springing up of our buying and canning industries has created a demand for its cultivation, and it stands to-day one of the most remunerative crops grown upon the farm in this country, creating labor and providing food for man and beast.

Some of the best results in growing have been found by plowing in clover at the time required for planting, care being taken to pulverize the newly turned up earth thoroughly, for which the disk harrow seems to be particularly adapted. Mark three feet ten inches each way; the seed does not cost much, so use plenty, and as soon as the corn has reached the height of three inches or is fairly up, use a light cultivator each way. Hoe, being careful in weeding not to leave more than four plants in a hill; in hoeing remove everything that may hinder the young plant from standing erect; put very little earth around the plants, as too much of the soil against the plant will cause it to push out roots near the surface, which is followed every time with branches from the plant near the surface of the ground, spoken of by us as suckers. Cultivate each way every week until the corn begins to tassel out. Good results have been found by plowing in barnyard manure with clover. The corn feeds upon the vegetable mould turned in, and if the crop has been grown for drying, or canning, it will be harvested in time to give you one of the best seed beds you can get for fall wheat.

Drying corn has taken its place with the drying of fruit. Upon the introduction of the evaporator for drying fruit, corn soon became an article in trade with fruit. It had scarcely reached its place in trade when the manufacturer discovered that the riper the corn the more pounds it made, forgetting that he had a reputation to sustain for his goods, hence its neglect in trade. Some manufacturers have been more discreet, and their brands are looked for in the trade. When the grain has reached a size such as is desired for table use, it is then ready for drying, but as soon as it has passed from its milk to its pulp state it is unfit.

The idea has been entertained that no sweet corn grown in Canada could be relied upon for seed. This idea is being disputed. The corn at the dryer that is found to have passed from its milk to its pulp state is passed over to the seed drying room, where an even temperature is maintained until the grain and cob has become thoroughly dried. In this way seeds have been produced as reliable as any American seeds can be, by the selection of the earliest and best ears. Under this process of curing for seeds, I believe the corn will be improved in earliness and size of ear.

THE FRUIT COMMITTEE'S REPORT.

The Fruit Committee reported as follows :

The Committee on Fruits exhibited at the summer meeting of the Fruit Growers' Association have the honor to report that the canned goods department was fully represented by Wellington Boulter, proprietor of Bay of Quinte canning factory. Pears, plums, quinces, strawberries, blueberries, corn, peas and pumpkins—all were found upon examination to be of superior quality, and presenting the same fresh appearance as when first put up.

J. A. Morton, Wingham, shows Crown Bob, Whitesmith and Ocean Wave in gooseberries, all English varieties of good size.

A. Morton, Brampton, one plate of Ringer gooseberries of fine appearance, and largest in size of any gooseberry shown.

P. E. Bucke, Ottawa, Conn and Downing gooseberries; the Conn as compared with Downing grown side by side appears to be double in size. He also shows Moore's Ruby, Cherry, London Red and Fay's Prolific currants, all good size.

Wallace Woodrow, Picton, shows Wilson, Crescent, Manchester, Sharpless and Jersey Queen strawberries, Downing gooseberry and White Grape currant, all showing evidence of high culture. Also samples of "Home" canned goods in Shaffer and Golden Queen in rasps, and White Grape currant, all presenting a fine appearance.

A. M. Smith, St. Catharines, Marlboro and Highland Hardy raspberries and Vergennes grape. This grape is of last season's crop, packed in hardwood sawdust and remarkably well kept, although the flavor is not quite equal to freshly gathered fruit. This is evidence of what can be done in keeping grapes through the winter in a fresh state.

G. W. Caston, Barrie, some very fine samples in maple syrup and sugar.

W. W. Hilborn, Ottawa, sample of Salem grape was shown that had been packed in fine, dry sand, and preserved their appearance to a remarkable degree, although the flavor was not quite equal to freshly-gathered fruit.

The Experimental Farm shows in raspberries Turner, Tyler, Souhegan, Chapman, Rancocas and a new seedling raspberry named Hubner, originated from wild berries grown in Northern Muskoka. It resembles Cuthbert in size and color, in quality equal if not better and a week earlier than that old standard variety, and should receive a more extended trial. A number of interesting seedlings of red and black rasps, originated by Professor Saunders. Among the number was one large red, about a week or ten days earlier than Cuthbert, fully as large, productive and promising; also a seedling of Davidson's Thornless, a cap variety two or three days earlier and fully as large as Tyler, equally as good in quality, free from thorns, as strong a grower and apparently as productive. A seedling black currant was also shown of large size, stem being long and well filled, ripening very evenly; well worthy of trial. An interesting collection of fifty-eight photographs of the leading varieties of new and old strawberries grown on Experimental Farm, showing their exact size and form, was shown by W. W. Hilborn. Owing to the general drouth, the samples of fresh fruit exhibited were scarcely up to the standard.

All of which is respectfully submitted.

J. P. WILLIAMS,
WALLACE WOODROW,
W. W. HILEORN.

A vote of thanks to the County of Prince Edward and to the inhabitants of Picton for their kindness to the Association, was moved by Mr. Wright, seconded by Mr. Gibb, and responded to by Mr. Boulter, Mr. Dempsey, and Mr. Storey, Reeve of the township, after which the convention adjourned at noon.

In the afternoon, upon invitation from Mr. Boulter, the delegates took a trip in a steam yacht to Glenora, a summer resort five miles east of Picton, noted for the "Lake on the Mountain," two hundred feet above the level of the waters of Lake Ontario and the Bay of Quinte. Lunch was served at the Glen House by Mrs. Comer, the proprietor, and after a few hours happily spent, the party returned in the evening to Picton, whence they dispersed. On the following day Mr. Boulter conducted a party to the famous sand-banks, some fourteen miles south-west of Picton, on the shores of Lake Ontario, and on returning the party took the train at Bloomfield station for their homes.

APPENDIX.

1. SECRETARY'S PORTFOLIO.

HYBRID SIBERIAN APPLES.

BY CHAS. GIBB OF ABBOTSFORD.

The old names of "Crab Apple" and *pomme d'ornament*, are no longer suitable for these fruits. The little berry-like crabs of Siberia, and their descendants, have been pollenized and re-pollenized on this continent, retaining the hardiness and fruitfulness of their female parent, the Siberian, yet bearing fruit in quality more like our best apples. In some cases, too, we have retained the thinness of skin, and the brisk sprightliness of flavor of the Siberian, while largely increasing its size and entirely getting rid of its astringency.

I have fruited 29 varieties, mostly from Minnesota and Wisconsin. The six best I will mention, in order of ripening.

Early Strawberry (of Minn.). I recommend this for home use, as it ripens with Red Astrachan, and is better in quality than any apple I have which ripens at that season. When for the first time sent to the St. Hyacinthe market, nobody wanted it. It was sampled out to every one, and now and then somebody would buy a peck. Next week everyone was asking for "la petite pomme rouge." Last year twelve barrels were sent to the St. Hyacinthe market and sold readily.

Whitney's No. 20 (of Ills.), is a beautiful red little apple, rather than a crab, and only shows its Siberian ancestry in the texture of its flesh as it becomes mellow. It is of first quality as a dessert apple, better than Early Strawberry.

Gibb. Raised by G. P. Peffer, of Pewaukee, Wis., from the Yellow Siberian Crab, fertilized by Fall Greenings. The skin is a bright deep yellow, sometimes bronzed in the sun. The flesh too is yellow. My friends are all fond of it and beg of me to send them some for canning. It cans like a plum.

Brier's Sweet (of Wis.). From Transcendent, pollenized by Bailey's Sweet. It is sweet and has not the Siberian character of flesh. The tree suffers when young from aphides.

Orange (of Minn.). A pale orange, thin skinned fruit of very fair quality, free from any astringency.

Lake Winter. A seedling, by Mr. J. C. Plumb, of Milton, Wis. Of fine quality, and keeps till November or later.

These six varieties are all hardy trees; all young bearers, except Early Strawberry; all heavy bearers; all good growers except Gibb; all entirely free from astringency except Gibb, in which it is very slight; all of good quality as dessert fruits. This is not merely my own opinion. When my friends are strolling through my orchard tasting everything they like the looks of, even though there may be Fameuse and St. Lawrence and lots of other good apples, I find that they taste and re-taste and say they like these so-called crab apples.

However, all these kinds except, perhaps Lake Winter, after becoming ripe deteriorate quickly. This is the nature of the Siberian character of flesh. They should be marketed quickly.

Of the other twenty-three varieties I have fruited my favorites would be Meeder's Winter, Minnesota and Beeches Sweet; and of the varieties I have seen but have not myself fruited, the Rose of Stanstead and Rottot. This latter is a St. Hilaire variety of deep color and good quality. For jelly we need acid crabs of fairly deep color, astringency does not matter. For canning slight astringency, as in the Montreal Waxen (known also as Queen's Choice), cannot be tasted, though strongly astringent varieties like Hyslop and Transcendent, people usually soon get tired of.

In the Western States the Siberian and its crosses have proved so subject to blight that their cultivation has been given up. Blight is rarely troublesome even in the warmer end of our province.

I would however, warn my fellow fruit-growers that a tiny crab can produce as good a codling worm as the largest apple, and the habit of growing a lot of poor crabs which are not worth picking, may be the means of spreading in a wholesale way the worst insect foe with which the apple grower has to contend.

In conclusion I would recommend for trial in the colder climates of our province these fruits of semi-Siberian origin, and if you think I have over-rated their qualities, then, next September, send a deputation to Abbotsford, and await their report.—*13th Report Montreal Horticultural Society.*

NEW VARIETIES OF GRAPES AND THEIR VALUE.

BY W. MEAD PATTISON, CLARENCEVILLE, P. Q.

As a general prelude I would say the summer of 1887 was unusually favorable not only for early ripening, but for exemption from any traces of mildew. An enemy has, however, appeared in the "English sparrow," yearly becoming more destructive to the grape, not only in its embryo state but to the ripe fruit, forcing us to resort to bagging the clusters before they begin to ripen. The season was notable from favorable results in a few new varieties, while some spoken of with favor in former years have shown deficiencies. Numbers of new varieties are yearly introduced and applauded by those pecuniarily interested, but an insignificant number survive the trial, yet I believe the acme of improvement in out-door grapes is by no means attained, though the name of Rogers may for some time stand foremost for the number and value of his hybrids.

The grape of the future must be of high flavor and purer quality! Consumers are not critical enough. They are inclined to judge from appearance and cheapness, not quality, but fruit dealers in the large cities of the United States say "people are beginning to discriminate, and yearly the better class of grapes are more in demand and the poorer at scarcely remunerative prices." When the criterion is quality, more propagators of new varieties will bend their efforts in that direction, and the poor trash on our markets, in the shape of cheap grapes will be displaced by good fruit; as yet this matter largely rests with the consumer. Few men have been more fully alive to the new era approaching than A. J. Caywood & Son, of New York State, who have introduced three new varieties recently. We will now only deal with their Ulster Prolific and Duchess. The former a red grape has fruited here for three years, in size nearly twice that of Delaware, compact, medium sized bunch, in quality much preferable to Concord, with which we draw the comparison only as regards fruitfulness and vigor, it ripens here some time before it, and the canes being short jointed the vine may prove to bear more fruit in the same space; if this conjecture is realized Ulster will be a very profitable market grape; as to keeping qualities it continues good through January. While in red varieties I will say that Jefferson, a very handsome and excellent grape, ripened with me last year, but later than Concord, from this fact it will be of very little value for general cultivation here. Mary continues to set its fruit imperfectly, consequently is of no value for market. Vergennes still very prolific and valued for winter use. Wyoming Red bears loose imperfect bunches, forbidding in appearance and foxy in flavor, but very early. Owasso is of excellent quality but bears imperfect clusters, ripening late. Challenge is of no value, so how can we judge by a name?

Of black varieties, "Jewel," originated by Mr. Burr, of Kansas, U. S., by his system of natural fertilization by grouping the vines, claims special notice. Principal parent supposed to be Delaware, which it closely resembles in flavor, a trifle larger.

Empire State and Niagara vines had a set-back in the winter of 1885-86, and have not fruited yet; both strong growers, requiring checking in season to properly ripen the wood. From what I have learned of Empire State it is highly esteemed for quality and earliness, but bears sparingly. Mr. Jack has for two years exhibited very fine specimens of Niagara which he must have had several years in cultivation.

Mason's Seedling, originated from Concord seed in Illinois, U. S. It has fruited for three years; berry size of Concord, bunch not as showy, flavor of fruit much preferable;

if it improves in bearing will be a very valuable acquisition. The white varieties—Prentiss, Hayes, Rickett's Golden Gem, Lady Washington, Naomi, Undine, Faith, Grein's Golden, Rommell's July, Superior and Golden Drop, have proved here uncertain and of little value. Last year I discarded and dug up a larger number than heretofore.

Classification of varieties popularly recognized as "Standards," given in order as to estimate of value here.

WHITE.—Lady, Belinda, Antoinette, Martha, Carlotta, Sweetwater, Purity, and Allen's Hybrid.

BLACK AND PURPLE.—Champion and Hartford (only for earliness and market), Worden, Barry, Herbert, Aminia, Essex, Moore's Early, Burnet, Eumelan, Concord, Belvidere, Rockland Favorite, Adirondack, Creveling, Whitedale, Senasqua, Peabody, Waverley, Cottage, Canada, Florence and Bacchus.

RED.—Delaware, Lindley, Massasoit, Rogers No. 8, Gaertner, Rogers No. 14, Vergennes, Agawam, Salem, Rogers No. 5, Brighton, Walter, Northern Muscadine, Rogers No. 30, and Underhill's Seedling.

It will be observed that some highly esteemed for quality are low down on the list, and others are given a prominence from the point of earliness. Defects, viz., lateness, unfruitfulness, imperfect setting, tendency to mildew, enfeebled roots and weak foliage, are taken into consideration.

RUSSIAN APPLES FOR THE COLDER PARTS OF THE PROVINCE OF QUEBEC.

BY MR. CHAS. GIBB, OF ABBOTSFORD, P. Q.

Did it ever occur to you how few "tree-fruits," that is, fruit bearing trees, we have, that are *natives* of this continent? We have no apple, except the sweet scented crab of the South and West. No pear. In plums we are better off; we have the wild plums of Canada and the North-Western States, the Chickasaws of the west and south, and the Beech Plum of the coast. Of cherries, we have the Choke Cherry, Bird Cherry and the Wild Black. We have mulberries, but no approach in quality to those of the old world. Persimmons, but not equal to the Kaki of Japan. We have a bitter orange, but no fig, pomegranate, peach, nectarine, quince or apricot. While the Chinese and Japanese and the Romans and other early people in the old world were slowly developing these fruits from their wild forms, we had an Indian population who lived by fishing and hunting. Had there been an aboriginal population like the Chinese or Japanese, horticultural in their tastes, then our wild grapes would have been fully equal to any in the world; our crab apple at least better than it is; our haws the size of small apples; our choke cherry free from astringency; butternuts with shells as thin as Spanish walnuts; wild black cherries equal to the Black Tartarian, and wild plums fully equal to the Washington and the Green Gage.

Where did our fruits come from? Where originally from, I will not enter into. Let us go back to the time when the peasants of Normandy and Brittany were gathering the seeds and perhaps the scions of the fruit they loved most in their native land before embarking on their long and perilous journey to New France. Later on the Englishman introduced his favorite fruits, the Scotchman his, and we soon had in New England and in Canada the fruits of the mild, moist portion of Western Europe. The uncertainty of these fruits of Western Europe in the colder parts of this continent, both in the Eastern States and on the Western prairies, directed attention to the colder districts of Eastern Europe. The U. S. Department of Agriculture at Washington imported from Dr. Regel, of St. Petersburg, in 1870, 252 varieties of apples. These were planted and fruited upon the department grounds, but the climate of Washington was such that the latest of them ripened and dropped from the tree by August 4th. They were, however, widely distributed for six years, and in one year 100,000 packets were sent out. Many varieties proved to be Duchess. There were evidently many mistakes, attributed in the west to the carelessness of the Department, which, however, was not so. The collection at that time rather fell into disfavor. I will allude to this again.

Professor Budd, of the Iowa State Agricultural College, in 1879, imported from Dr. Regel, St. Petersburg, 73 varieties, and from Dr. Schroeder, of the Agricultural Academy of Petrovskoe Rasumovskoe, near Moscow, about 154 varieties. Exact information about these apples we could not get. The only thing to be done was to go to Russia and get it. Some one had to go. Mr. Budd and I went. This was in 1882. We found the Russian fruits not looked up by the Russians as we had expected. We found St. Petersburg and Moscow not specially favorable to orcharding, but 430 miles to the east of Moscow, in latitude 54° , 600 miles nearer the North Pole than Quebec, we found apple-growing the great commercial industry of the people. We wandered from village to village along the Volga in a little sail boat, then in a tarantass, a basket on wheels without springs, with hay on the bottom, driven by three horses abreast; sometimes living on black bread and sleeping on a bundle of hay. Here the winter temperature for the three months is 9° above zero, which is the mean for the winter quarter for a period of no less than fifty-nine years.

Mean temperature for the winter and summer quarters for several stations in Quebec, with the average highest and lowest temperatures :

STATIONS.	MEAN TEMPERATURES.				EXTREMES. (Average.)	
	Winter.		Summer.		Highest in Summer.	Lowest in Winter.
	Temp.	A	Temp.	A'		
Quebec	15.9	.....	62.5	.....	89.7	-22.9
Chicoutimi . .	11.9	-0.6	60.8	-0.3	96.3	-32.2
Cape Rosier	14.5	+4.7	55.5	-1.9	74.0	-15.0
Anticosti, S. W. P.	17	-0.6	56.9	-0.3	71.0	-14.6
Father Point,.....	15.5	-1.0	54.9	-0.4	80.3	-23.8
Cranbourne, Dorchester Co.	15.6	-0.6	59.2	-0.3	90.0	-27.8
Dalhousie, N. B	13.3	-0.6	55.6	-0.3	92.2	-20.5

The figures A and A' represent a correction, which should be applied to the given mean for the station to reduce it to the mean of a larger number of years, and is derived from the observations at Quebec.

That is nearly 7° colder than the city of Quebec. The temperature tables which were published in my report in 1882, were very kindly prepared for me by Robt. H. Scott, Secretary of the Meteorological Office in London. To Prof. Carpmael, of Toronto, I am indebted for temperatures as herewith given for Chicoutimi, Cape Rosier, Anticosti, Father Point, Cranbourne and Dalhousie, N. B. Of these the lowest reading for the winter quarter is at Chicoutimi, and yet it is milder than Kazan in Russia by three degrees.

Let me comfort you then with the fact, that in no part of the Province of Quebec where we are likely to grow apples is it colder than in the extensive orchard regions of Kazan. You have great diversity of site in this Province. Choose your hill-sides, not your bottom lands, unless near large bodies of water, thus avoiding late spring and early autumn frosts ; and if possible plant where you have protection from prevailing winds. Too warm a southern exposure is often more risky than open exposure to the north. As you go north your difficulties will increase, yet you have no such difficulties to cope with as they have on the Western prairies. To test the hardiness of the Russian apple trees, at their worst, in bleak, open prairie exposure, at the Minnesota State Experimental Station at St. Anthony, near Minneapolis, 65 varieties were planted. The soil was rich,

and under good culture they made a growth in 1886 up to 20 and even 26 inches, which, however, ripened well before winter. The winter of 1886-87 was unusually severe. Not one variety started from its terminal buds. Sixteen varieties lost one inch or less of growth. Duchess killed back sometimes to the old wood, but usually started buds from the base of the new wood. The verdict was 16 varieties hardier than Duchess! Minnesota experience is most valuable to us.

The value of these experiments, carried on with scientific accuracy, as in these experimental stations, is very great. Allow me to digress a little to glance at some earlier attempts at experimental horticulture. Over two centuries ago, when the Portuguese, Dutch and Spaniards were founding colonies in the East Indies, after order had been established, one of the first things to be done was to plant a garden for the testing of food plants. These experiments were enlarged as the colony increased, and were the forerunners of the beautiful botanic gardens of the present day. A little over a hundred years ago when the British, French and Spaniards were fighting like tigers for the possession of the West Indian Islands, a French vessel laden with plants from the Isle of Bourbon, near Mauritius, to found a botanic garden in the West Indies, was taken by the British and towed into Port Royal, Jamaica. This was the beginning of the experimental work in that island. The Mango, an East Indian fruit, is now the commonest forest tree in Jamaica; the banana, also an East Indian plant, a chief food plant of the West Indies. The East and West Indies have interchanged for over a hundred years. The enormous export fruit trade of the tropics is the result of this. That we have oranges and lemons, bananas and pineapples in our markets, at reasonable rates, is due to this. All the British colonies in the tropics and sub-tropics have (call them what you will) their testing grounds, botanic gardens, experimental stations. We have now at Ottawa a central experimental farm, begun over a year ago, and branch stations will be established, one for N. S. and N. B., at Nepan, $5\frac{1}{2}$ miles east of Amherst, N. S., one each for Man., N. W. T. and B. C. Prof. Saunders is just the man for such important work. But that Canada should have remained so long without any experimental station, is a fact without parallel in British colonial history.

Fortunately for us we had good neighbors. The U. S. Department of Agriculture have long been experimenting. (See their reports, beginning with their first report in 1847.) Of late years State experimental stations, often under the State Agricultural Colleges, each taking a line of its own, are doing a grand, good work now, since the passage of the "Hatch Bill" by Congress, allowing \$15,000 per annum to each State Agricultural College for such special work, we may expect still more important results. I said that the East and West Indies had interchanged their products for over one hundred years, but it was not till 1870 that a collection of the apples was sent from our like-climate in the old world, viz., Russia, and then imported, not by us, but by the U. S. Government. This importation by the Department at Washington was received by Dr. Regel from many different places in Russia. Between 1861 and 1870 Dr. Regel had been receiving scions and samples of fruit from 39 sources, though sometimes two or more in one place, and although not so thought at the time, this collection contained the greater part of the best apples of the colder parts of Russia. Prof. Budd, at the Iowa State Agricultural College, has been importing ever since, gathering in quantity, propagating and scattering in all directions. Thousands of growers are testing these Russian fruits, and it is a comfort to feel that one is not working alone, but that all are co-workers in a common cause. I have over 100 varieties of Russian and German apples on trial; 75 varieties I have already planted into orchard, each tree labelled and in my orchard book, a note as to place from which each tree was received, so that whatever should happen my link in the chain should still hold good.

The introduction of these Russian apples has been beset with drawbacks, nomenclature is uncertain in Russia, and varieties have been propagated by Russian names spelled in all sorts of queer ways, or by translation either unmusical or wholly wrong.

The last report of the American Pomological Society contains lists of these fruits imported from Russia and Germany written by me. This work was undertaken by the request of that Society and appears as a suggestion to our authoritative body. A similar report, but in the alphabetical order, has been made out by Hon. T. T. Lyon, President

of the Michigan State Horticultural Society, for the report of the Division of Pomology of the U. S. Department of Agriculture. Thus my suggestions have become fixed and unchangeable ; that is, owing to their appearance in the American Pomological Society's report and at the same time by Mr. Lyon in U. S. report, it will be found unadvisable to make any changes except for some glaring mistake. Thus another drawback is being removed.

I am, I find, specially asked for a short list best adapted to our colder climates. I give this with a good deal of hesitation, from unripe experience, but give it in part from their behavior in my own orchard, and in part from trees I have seen in fruiting in Wisconsin and elsewhere in the U. S. In order of ripening, (i) either Yellow Transparent, or Thaler (Charlottenthaler); (ii) Raspberry (Malinovka); (iii) Titovka; (iv) Golden White; (v) Longfield; (vi) Arabka (of Ellwanger and Barry).—*13th Annual Report Montreal Horticultural Society.*

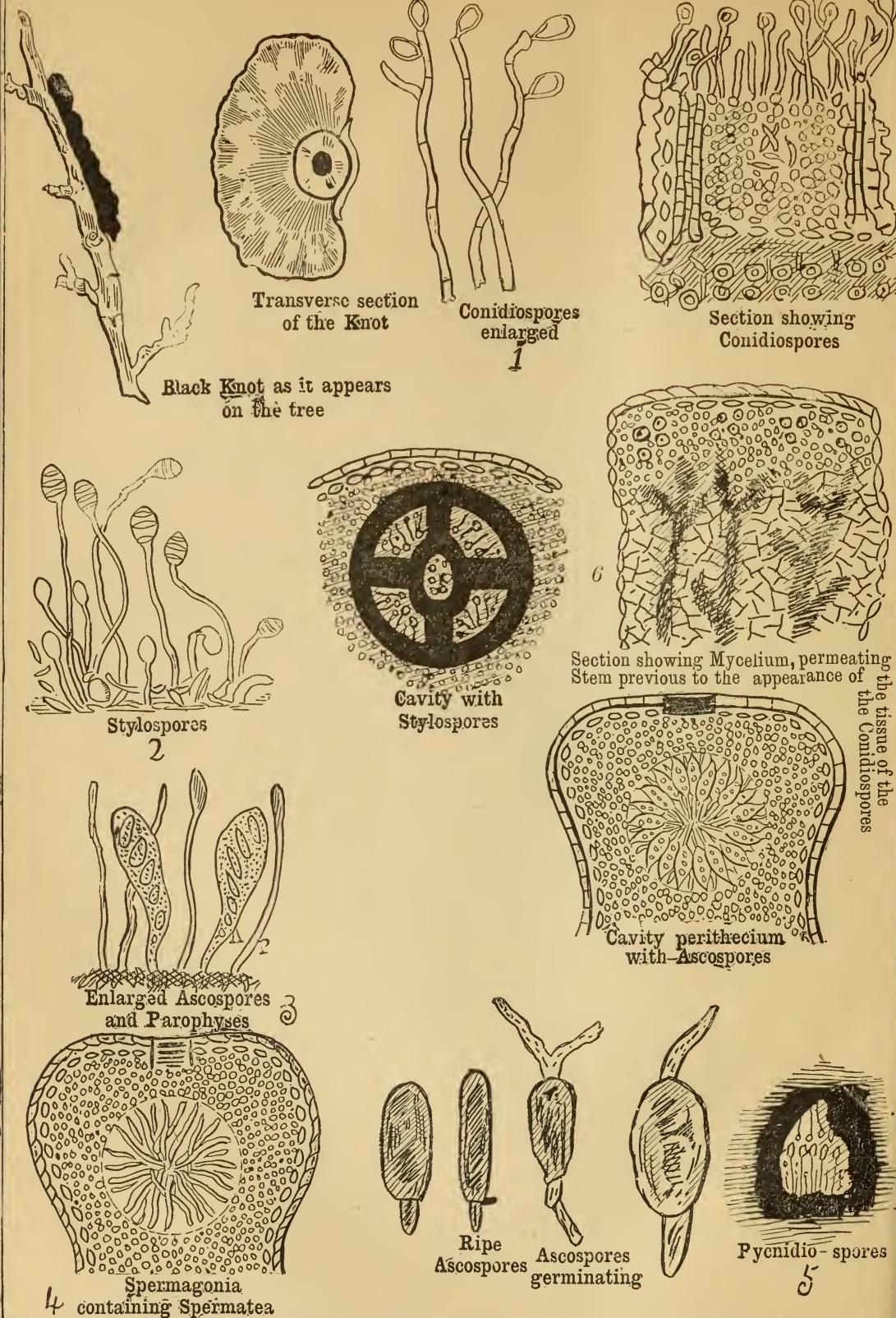
THE NATIVE PLUMS OF THE NORTH-WESTERN STATES.

BY MR. CHAS. GIBB, OF ABBOTSFORD, P.Q.

My first efforts to grow plums proved failures, I now succeed in having a crop every year.

I began in 1872 by planting those varieties of the European plum which had done the best (and that means only fairly well) in the sheltered city gardens of Montreal. Lombard bore one glorious crop; Bradshaw a few now and then; Washington bore a few and died. A large black, like Quackenboss, also bore a few specimens several years. So has another like Coe's Golden Drop. A large number of varieties died before fruiting, but as many I had were not true to name, these may not have been the kinds I bought them for. Rev. Canon Fulton, of Maratina, Huntingdon, sent me a variety of Damson, it bore a few and died. Later Mr. James Brown, of Montreal, sent me Corse's Nota Bene which has borne but one plum and will not live much longer. He also sent me Dictator and Corse's Sauvageon, but they did not seem to thrive. I have Moore's Arctic, but their unthrifty condition may be owing to the dried state of the trees when I received them. I have also the Prunus Simonii, of China, a fruit flat like a pomme grise. The tree is not hardy enough. Two years ago I imported from Europe a number of varieties, especially of the prune type of plum, for in some cases the prune is found to be hardier than the plum; for let me remark that in Europe men plant their gardens or roadsides with "prunes" or plums, just as in California they plant out their acres with "raisins" or grapes. I have several varieties of the Russian plums. The Abbotsford Fruit Growers' Association has twice imported from Moscow, but they are too young to report upon. But I must here draw your attention to the fact that we have not in this country the plums of the Volga, and of the other colder districts of Russia. Mr. Shroeder, of the Agricultural Academy at Petrovskoe Rasumovskoe, Moscow, received the plums he sent to Abbotsford and to Ames, Iowa, from Poltava, a comparatively mild region. Dr. Regel of St. Petersburg, has sent out three varieties to this country, from where obtained he was not able to say, and beyond this but one really Russian variety from Central Russia has yet reached us and that is the Moldavka of Vorouesh. It is much to be regretted that the plums of Volga are not obtainable here, and as many of them are to be found only in little out-of-the-way villages like Kluchichi and Tenki, in the Province of Kanzan, it will be many long years before we may hope to have them.

However, we have another race of plums which have proved a decided success at Abbotsford, viz., the improved varieties of the native plums of the Western and North-Western States. I have about ten Wisconsin plum trees which were the roots of root grafts planted in 1873. They bore five good crops in succession, took a year's rest and have borne almost each year since. They are nice for eating and pretty good for cooking, but when canned the astringency in the skin and stone becomes too *prononcé* and one



soon gets tired of them. They are the Western form of our *Prunus Americana*. I have also the DeSoto. Little trees of it bore their first crop last year. It is the best in quality of these *P. Americana*, and I heartily recommend it for trial. I have about eight trees of Miner, a Chickasaw, or a cross with it, which have borne moderate or light, but yearly crops without any failure for at least eight years. The fruit is rather large, dark dull red, and has a flavor like a muskmelon. It ripens October 1st and keeps till November 1st. I had about six bushels last year, and owing to its lateness it sells well at 80 cents per bushel, but I do not recommend anyone to grow it who lives further north than Abbotsford. Basset has fruited with me, but is small, astringent and inferior. Of varieties which I have not fruited but which I have seen and tasted on the grounds of the Iowa Agricultural College, I would specially mention Mooreman, a small red fruit of fine quality, and Wolf, a large, red moderately juicy freestone, with heavy rank foliage. Of others I find Weaver spoken of as doing well in Minnesota, and Maquoketa, Speer, Wyant and Rollingstone promise well on the College farm at Ames, Iowa.

THE BLACK KNOT.

BY PROF. J. H. PANTON, M.A., GUELPH.

One of the most troublesome diseases of vegetable origin affecting the fruit trees of Ontario at the present time is the well known so-called black knot. Though it has been the subject of much study, and much has been learned regarding its life history, still fruit-growers, to a great extent, are helpless to withstand its attacks.

The duty devolving upon me in reading this paper before you, is to open up a discussion on this troublesome pest. Its attacks seem to be confined largely to the plum and cherry trees, few of which seem to escape its destructive influence.

An examination of the "knot" at an early stage of its development shows innumerable small transparent threads only seen by the aid of the microscope. These branch among the cells which compose the tissue of the inner bark of the tree and form the so-called *Mycelium*, or vegetable part of the fungus. (6) The threads become very intricately twisted together in bundles as development proceeds, beginning in the cambium layer of the bark and radiating outwards. As spring advances, the threads increase in size, reach a more matured condition, and the knot presents a somewhat velvety appearance later in the season. This is the result of the threadlike structures sending up innumerable short-jointed filaments (*Conidia*) on the ends of which are borne egg-shaped spores known as *Conidiospores* (see fig. 1). These are very small, requiring the aid of a microscope to see them. When ripe they are readily disturbed and may be blown long distances by the wind and thus reach new places become the origin of knots similar to those from which they came. This mode of reproduction in the knot continuing till the summer is well advanced, when another class of spores begins to develop and reach maturity about February. The surface of the knot during winter shows pores which can be seen by the naked eye; these open into cavities, on the walls of which are two kinds of structures, one consisting of slender filaments (*paraphyses*) the use of which are not known, the other club-shaped (*asci*); in the latter are developed, toward the close of winter, the *ascopores*, (see fig. 3), usually eight in each *ascus*, at the end of which is an opening through which the spores pass and become new starting points for the fungus when they reach proper conditions for development.

Other cavities also are found among those with the *asci*; these contain very minute oval spores divided by cross partitions into three parts, and borne on slender stalks (see fig. 2). These are the so-called *Stylospores*, the use of which is not known, but generally believed to be concerned in the perpetuation of the species. Still, other cavities exist containing exceedingly slender filaments (*spermatia*), (see fig. 4) also concerned in reproduction. They are seen in the knot during winter and spring, and are much less common than the *conidiospores* or *stylospores*.

Interspersed amongst the cavities already referred to, one finds from time to time spaces more flattened than these, and often instead of appearing oval, seem almost triangular. They are lined with short, delicate filaments, which end in a minute oval body. These bodies are produced in great numbers and are discharged in masses, being held together by a sort of jelly. This form is known as the *pycnidiospores*, and also seem to be connected with the process of reproduction (see fig. 5).

Thus, you perceive, we have no less than five different kinds of reproductive organs connected with the fungus which causes black knot, viz.: *conidiospores*, *ascospores*, *stylospores*, *spermata*, and *pycnidiospores*, all more or less concerned in the perpetuation of this destructive disease.

For some time before the true nature of this disease was known it was generally believed that the cause of the "knot" was the presence of insects, but since the life history of this fungus has become a subject of study, and its various stages of growth made out as already described, the insect theory has been abandoned. The following reasons for believing that the knot is not caused by insects might be remembered :

1. The knots do not resemble the galls made by an insect.
2. Although insects or remains of insects are generally found in old knots, in most cases no insects at all are found in them when young.
3. The insects found are of several species, which are also found on trees which are never affected by the knot.
4. We never find black knot without the fungus *sphaeria morbosa*, and the mycelial threads of that fungus is found in slightly swollen stem long before anything like a knot has made its appearance, nor is this fungus known to occur anywhere except with the knots.

The morello cherry seems most susceptible, and it is supposed that the disease has originated from some of the wild cherries rather than the wild plum.

Notwithstanding the subject of black knot has received so much attention, little advance has been made in its extirpation, other than the cutting the knot off as soon as observed.

When the knot makes its appearance the branch should be cut off a short distance below the slight swelling of the stem, which is seen just below the knot. When cut away, burn the branches to prevent the spores from spreading the disease. These spores, it will be remembered, are microscopic and in great numbers; besides, if the branches are not destroyed the ascospores will ripen during the winter and perpetuate the trouble. The most favorable time to cut off the knots is late in autumn, before the ascospores are ripe, but as the conidiospores ripen in early summer, if knots are seen in spring they should be cut away at once.

Not only should deceased branches of cultivated cherries and plums be removed, but also the choke cherry, bird cherry, and wild plum in the vicinity of orchards be destroyed.

Some recommend the application of turpentine to the knot; this requires to be done carefully, or the neighboring parts of the branch will be injured, and it is questionable if the results would be favorable. If the knot is large enough to be treated in this way it is likely nothing short of removal would check the spread of the fungus.

Unfortunately little regard is paid to the law which requires affected trees to be destroyed; they are thus scattering millions of spores yearly which are spreading the disease to all parts of the province until the black knot has become almost universal, and in every locality these blighted trees stand as silent monuments of the indifference and ignorance of those who should co-operate in fighting against a common foe.

THE MILDEWS ON THE GRAPE-VINE.

BY DR. C. V. RILEY.

There are very many fungi known to attack the grape-vine, as is evidenced by a glance at such works as "Fungi parassiti dei Vitigni," by Dr. Romueldo Pirotta (Milan, 1877), or "Die Pilze des Weinstockes," by Felix von Thümen (Vienna, 1878). But the two principal fungi, both of them popularly called "mildews," which interest the grape grower, on account of the extensive injury they cause, are the *Uncinula spiralis* (Berkeley & Curtis), and the *Peronospora viticola* (Berkeley). Any popular statement in reference to grape-vine mildews, in order to be accurate, must take cognizance of these two species which occur ordinarily under opposite atmospheric conditions. Failure to do so has wrought much confusion in the fugitive literature on the subject. As popular distinguishing terms, it would be well to call the former the "Powdery Grape-vine Mildew," and the latter the "Downy Grape-vine Mildew."

It is my purpose here to deal chiefly with the latter, but it will be desirable first to briefly consider the characteristics of the former, that the differences between the two may the more readily appear.

THE POWDERY GRAPE-VINE MILDEW.

This is the *Uncinula spiralis* (Berkeley & Curtis), and the conidial form has long been known by the name of *Oidium Tuckeri* (Berkeley).

General Appearance.—This particular fungus produces a white, powdery appearance on the upper surface of the leaves, which at first looks not unlike dust, and which is much less conspicuous on the lower surface. Beginning in spots, these grow larger and larger until they cover the whole leaf, and include even the young stems and berries.

Structural Characteristics.—The powdery spots consist of mycelial threads attached to the epidermis of the leaf by suckers. These filaments have a diameter of .004 mm. Portions of this mycelium rise up from the surface of the leaf and become constricted or intersected, thus forming cells. As these cells, which are the conidial spores, multiply, the terminal ones enlarge, ripen, and drop off, so that a succession of conidial spores is formed. The spores germinate at once by pushing out a germinating tube, generally at one end.

Late in the summer and autumn, the perithecia and asci are formed, ripening about the first of October. These are the resting or winter spores, and are small, black bodies occurring on both surfaces of the leaf and on the stems. They consist of an opaque sac with a cellular wall, from which a number of appendages radiate, to from three to five times the length of the diameter of the perithecium, and some of them either uncinate or spiral at tip. The perithecium measures from .07 to .12 mm. in diameter, and the number of appendages varies from 15 to 32. Inside the perithecia are the asci or sacs, which contain the spores. The asci vary from four to eight in number, nominally six, the spores also vary in number, the average being six. The *Uncinula spiralis*, therefore, appears in two phases—first, as a white, flocculent mold ; secondly, as perithecia, with more or less uncinate, or spiral appendages.

Variation in Habit.—One of the most interesting facts in connection with this fungus is that only the conidial form, known as *Oidium Tuckeri*, occurs, or is so far known in Europe. There is some question as to the actual specific identity of *Oidium Tuckeri*, as found in Europe, and the conidial stage of *Uncinula spiralis*, as found in this country. The bulk of opinion is, I think, that they are identical, for while Von Thümen, in his *Fungi Pomicola*, and in his *Pilze des Weinstockes*, follows Fukel in giving *Sphaerotheca castagnei* Lev. as a synonym of *Oidium Tuckeri*, thus implying that this last is the conidial form of the former. Fukel merely makes the conjecture without positive proof, and there is great improbability in the conjecture being correct. We have, in fact, in this case, so far as the evidence goes, one somewhat parallel to that of the Grape-vine Phylloxera. The gall-making form of this insect upon the leaf is of very common occurrence, and the form most easily observed in America ; whereas in Europe the species very

rarely produces the gall. Yet the historic evidence is conclusive as to the introduction from America of *Phylloxera vastatrix*, and almost as conclusive as to the similar introduction of this Oidium; and, to my mind, they both furnish admirable illustrations of a change of habit in an organism sufficiently marked that, without the historic evidence, the question of the exact specific identity of the parent, and its transcontinental issue, might well be raised. The interesting question, philosophically considered, is why, if the winter spore is necessary to the perpetuation of the *Uncinula* in America, the species can propagate for an indefinite period without it in Europe?

Effect on the Vine.—The fungus is less injurious to our hardier native grape-vines than to the European *Vitis vinifera* and hybrids of it. Hence it is more to be dreaded in California and in Europe than in the Eastern United States. It also prevails most in a dry atmosphere.

REMEDIES.

Sulphur is well known to be one of the most satisfactory remedies against this fungus, and is in universal application where the disease prevails. It is generally applied dry, by means of bellows, though, it seems to me, the wet method would have advantages with the use of the cyclone nozzle. Mr. A. Vitch, of New Haven, Conn., has found that in green-houses the sulphur may be advantageously applied by mixing it with linseed-oil to the consistency of paint, and brushing it on the flues or hot-water pipes. Mr. Wm. Saunders, the Horticulturist of the Department of Agriculture, has for many years used with great satisfaction, a weak solution of lime and sulphur, obtained by pouring water on one-half bushel of lump lime and ten pounds of sulphur, and then diluting for use.

THE DOWNTY GRAPE-VINE MILDEW.

General Appearance.—The other mildew, namely, the *Peronospora*, shows itself on the underside of the leaves in the form of a small patch of whitish down, and sends its mycelium into the adjacent tissues, destroying the parts, which scorch and turn brown, as if sunburnt. It has been known by various popular names, as "blister of the leaf," "blight," and so on. It generally escapes attention in its earlier stages, and experience shows that it is most destructive where the dews are heavy, or in continued damp, rainy weather. This particular mildew is the *Peronospora viticola* (Berkeley & Curtis), De-Barry having first referred to it as *Botrytis viticola*.

Structural Characteristics.—The mycelial threads or hyphae, are about .01 mm. in diameter, somewhat larger in the stems and petioles than in the leaves. They are found everywhere except in the wood proper, but particularly in the tissues of the leaves. Their contents are granular and somewhat oily, and cross partitions so characteristic of the *Uncinula*, are rare. Just beneath the stomata of the leaves, the hyphae are particularly abundant. Those which are to bear the conidia pass through the stomata and grow more rapidly than the rest, ramifying and reaching from .3 to .6 mm. in height, and bearing the conidia on the tips of the branchlets. The conidia are oval and obtuse, varying in size from .012 to .03 mm. in diameter. Germination takes place with great rapidity whenever there is sufficient moisture. Conidia placed in water become swollen and somewhat segmented in an hour. The segments become oval bodies, collect at the distal end of the conidia, rupture the wall in a short time and escape, swimming off as zöospores, each with two ciliæ. Each conidium produces, on an average, five or six zöospores, though the number is quite variable. They vary also in shape, and from .008 to .01 mm. in length. They move about from 15 to 20 minutes; then come to rest, when the cilia drops off, and a new mycelium develops from the side.

The winter spores, or öospores, are found in September and October, in discolored and shriveled parts of the leaves. They are spherical, .03 mm. in diameter, with a thick, smooth, yellow cell-wall. They fall to the ground with the leaves and lie dormant till spring.

So far as I can find, the actual steps by which the winter spores are produced, have not been observed in this species, or for that matter, in the *Uncinula*, but as the process

is known in the order Perisporiacæ, we may confidently assume that they result, later in the season, from the union of the contents of two cells, or hyphæ, i. e., they are of sexual origin.

We thus have, as in the Uncinula, both summer and winter spores. The summer spores develop outside the leaf, and germinate rapidly as soon as moistened by rain or dew. Consequently, during a wet summer, the spread of the fungus is extraordinarily rapid, so that within a few days a large vineyard becomes infested. The winter spores are found in the interior of the dry leaves, and hibernate within those on the ground. In summer they again get on to the young leaves by the agency of animals, wind, and rain.

Sulphur, as a means of checking or remedying this particular mildew, has proved a failure, and, indeed, no satisfactory remedy has, until recently, been found, though prophylactic means, such as those recommended by Mr. Wm. Saunders, namely, the sheltering of the vines by a board covering over the trellis, have been more or less successful.

The fact that no satisfactory remedy existed until lately, was well illustrated by the discussion which followed the reading of a paper by Mr. F. S. Earle, at the meeting of the American Horticultural Society, at New Orleans, last February, on "Fungoid Diseases of the Strawberry."* The concensus of opinion was that we have no remedy for most of the fungus diseases of plants. That this was, unfortunately, a true state of the case, practical cultivators will admit; for though intelligent treatment will check the growth of the black knot, and the proper use of lime and sulphur will check Erysiphe and Uncinula, these are about the only fungus diseases which we can control with satisfaction and certainty. Prof. G. C. Caldwell is reported to have stated about a year ago, at a meeting of the New York Horticultural Society, that mildew could be prevented by soaking the stakes in the vineyard in a solution of blue vitrol; but as that report does not specify which mildew was intended, I know not how authoritative it is.

During my visit to South France, in the summer of 1884, I was strnck with the prevalence of this Downy Mildew in most of the vineyards, and the French grape growers around Montpellier felt far more anxiety as to the consequence of this Peronospora than they did as to the work of the Grape-vine Phylloxera. They feel now, that with the aid of our American stocks, they can control and defy this underground pest; but the Peronospora, which was a few years ago unknown to them, but which has been introduced with the American vines, has so far entirely baffled them, as, I believe, it has baffled our own grape growers.

In an address which I had the honor to deliver before the Central Society of Agriculture of the Department of Hérault, in June, 1884, and which treated principally of insecticides and insecticide appliances, I took occasion, in view of the interest then felt in this mildew, to recommend the use of the following as a promising fungicide: The ordinary milk-kerosene emulsion, prepared after the formula given in my late official reports as United States Entomologist, with from two to five per cent. of carbolic acid, and the same percentage of glycerine, and then diluted in 20 to 50 parts of water to one of the emulsion, and sprayed on to the under surface of the leaves by means of a cyclone nozzle of small aperature, so as to render the spray as fine as possible. The suggestion of the carbolic acid was due to the results obtained by Prof. Gustav Foëx, Director of the Ecole Nationale d' Agriculture, at that place.

It was very gratifying to find this recommendation at once acted upon, and up to the time when I left Montpellier, with satisfactory results. Reports of further trials showed also, that this mixture so sprayed at once arrests the spread of the mildew. I was well aware of the difficulty of dealing satisfactorily with a fungus which may, in a single night, without any warning, manifest itself all over a vineyard; but it is a great point gained to know how to check it, even if the knowledge may at times be of little practical avail in large vineyards. But much good, nevertheless, resulted, and "*Le Procédé Riley*" was much written about in *La Vigne Americaine*, and other viticultural journals a year ago. However, the experience of the past year in France has furnished a remedy which, from all accounts, is in every way satisfactory, because it not only destroys direct, but acts as a prophylactic.

* Many writers on mycological subjects misuse this term "fungoid" (which means something not a fungus, but fungus-like), in speaking of true fungi or of a fungus disease.

My attention was drawn some months ago, to two articles by C. B. Cerletti, published the 15th and 30th of August, in the *Rivista di viticoltura ed Enologia Italiana*, announcing the success of hydrate, or slackened lime. My friends, M. J. Lichtenstein and P. Viala, of Montpellier, the latter having charge of the *Laboratoire de viticulture* at the *Ecole Nationale d'Agriculture de Montpellier*, soon thereafter communicated to me the discoveries made. M. Velicogna, in a report in the *Actes et Memoirs de la Societe imperiale et royale d'Agriculture de Gortiz*, for September and October, 1885, has also discussed the effect of hydrate of lime at length, his formula being $2\frac{1}{2}$ kilogrammes of the lime (*chaux éteinte*) in 100 litres of water.

The general tone of the experience with this hydrate of lime is satisfactory, but a mixture of hydrate of lime and sulphate of copper is still more conclusive, and numerous communications to viticultural journals and to the French Academy, attest the complete efficacy of the remedy. It has been the custom in some of the wine-growing parts of France to sprinkle lime and verdigris upon those vines which border on the roadside, as a means of warding off depredators. It was found that vines so spattered were not infested by Peronospora, while the rest of the vineyard might be attacked. This discovery led to further experiments.

Various formulæ have been given, but the most important articles are those by M. A. Perrey, in the *Comptes Rendus de l'Ac. d. Sc.*, Oct. 5, 1885, and by M. A. Millardet in the same publication, and reproduced in the *Messager Agricole du Midi* for Nov. 10, 1885. From this latter article I condense the following: Dissolve eight kilogrammes (18 pounds) of ordinary sulphate of copper, in 100 litres (about 22 gallons) of any kind of water (well, rain, or river), in a separate vessel. Mix 30 litres (about $6\frac{3}{4}$ gallons) of water, and 15 kilogrammes (about 34 pounds) of coarse lime, so as to make a milk of lime. Then mix with this the solution of sulphate of copper. These will form a bluish paste. Pour a portion of the mixture in a bucket or other vessel, thoroughly shaking it, and brushing the leaves with a small broom, taking care not to touch the grapes. There is no fear of any accident, not even to the most tender portion of the vines.

The treatment was made from the 10th to the 20th of July. At some points the operation was repeated a second time at the end of August, but without much advantage. It was, therefore, demonstrated that one application was sufficient.

The mixture, when dry, sticks very fast to the leaves. After the vines were treated there were several showers the beginning and end of August, also the frequent September rains, notwithstanding which, the evidence of the efficacy of the treatment, where no more than half the leaves were touched by the mixture, could easily be detected. That this remedy will prove effectual for the many other similar white mildews on other plants, caused by other Peronosporæ, there can be little doubt.

The same fear of danger as to the effect of this fungicide on the vine and on the wine, has been experienced in Europe as we experienced in this country in the early use of Paris green as an insecticide, and experience alone will settle the amount of danger there may be in the use of this new remedy.

BIBLIOGRAPHY.

I know of no one who has more fully recognized the practical bearings on the best method of dealing with these two fungi than Mr. Wm. Saunders. In the report of the Commissioner of Agriculture for the year 1861, p. 495, ff., he has an article: "Remarks on Grape Culture with reference to Mildew, both on the native and foreign varieties," and in a number of subsequent reports, as those of 1864, '65, '66, '67, '69, '81-2, and '83, he has dealt either at length or incidentally on the essential facts that the Uncinula is encouraged by a dry atmosphere, and the Peronospora by a moist atmosphere. His experience shows that the nature of the soil or mode of cultivation has but little influence on the fungus, and that protection from above, as by covered trellis, is about the best prevention of the Peronospora; also that grape-vines with downy foliage are more susceptible to the Peronospora than those with smooth foliage. His experience is very well summed up in a statement of it furnished for publication in my 5th report on the Insects of Missouri, p. 70 (foot note).

Of the writers on the structure and development of these mildews, Dr. Thomas Taylor was one of the earliest in this country, and found the peritheciun of the *Uncinula* on the European vine. His chief articles are contained in the reports of the Department of Agriculture for 1871 and 1874, but are marred by confusion in both text and plates. For accurate details the student should more particularly consult the following:

W. G. Farlow (whom I have mostly followed) "Notes on Some Common Diseases Caused by Fungi," (Bull. Bussey Inst. Vol. II., part II., 1877, pp. 106-114); also, "On the American Grape-vine Mildew" (*Ibid.* for 1876, pp. 415-425); Maxime Cornu, "Le Peronospora des Vignes," Paris, 1882; B. D. Halsted, "The White Mildews" (*Proc. 19th Session Am. Pom. Soc.*, for 1883, p. 87); and Wm. Trelease, "The Grape Rot" (*Trans. Wis. Hort. Soc.*, 1885, pp. 196-199).

SUMMARY.

We thus have, indigenous to this country, two mildews that are more particularly destructive to the grape-vine:

1. The *Uncinula spiralis*, or the Powdery Grape-vine Mildew, flourishing most in a dry atmosphere, not particularly destructive to our hardier native grapes, and easily controlled by use of sulphur. It develops chiefly on the upper side of the leaf, and produces simple ovoid summer spores, and more complex and ciliate winter spores, which are found upon both the leaf and the cane. Introduced into Europe many years ago, according to trustworthy evidence, it is only known there in the conidial form as *Odium Tuckeri*, and works more injury than it does with us.

2. The *Peronospora viticola*, or the Downy Grape-vine Mildew, which ramifies its mycelium in the substance of the leaf, and even of the fruit, and develops most in moist or wet weather. It produces its summer spores on the underside of the leaf, and a winter spore in the tissues of the dry and fallen leaves. It is not amenable to sulphur, but is checked by a diluted kerosene emulsion, in which a small amount of carbolic acid is mixed, but far more effectually checked, and even prevented, by a mixture of slackened lime and sulphate of copper. This should be applied early in the season, say in June, so as to act as a preventive, while the gathering and burning of the old leaves in winter time will assist. This species is more injurious with us than the other, and is especially troublesome on the European vines. It was first introduced into Europe in 1877, when it was found in Hungary, and has since spread through the greater portion of France, Italy, Switzerland, Austria, etc.

ARBOR DAY.

Believing that the following from Bulletin No. 33, of the Agricultural College of Michigan may be of service to our high and public schools in making the exercises of Arbor Day more interesting, the secretary includes it in this appendix, with the remark that a similar exercise was performed with much success on last Arbor Day at the Grimsby High School, Mr. C. W. Mulloy, B.A., head master.

The exercise presented below was first given by the pupils of the Grand Rapids schools on the evening of January the 26th, 1888, in connection with the Forestry Convention in that city. Though no trees were planted, the presentation of a literary programme designed to be suitable for adoption by the schools of the State was very creditable.

The exercises assumed the nature of a convention of trees. The meeting was called to order by Norway Pine, who moved the election of a chairman and secretary. After the election followed general speech-making, interspersed with music and songs. Each tree set forth in a few brief sentences his characteristics, properties, uses and various values. The exercises lasted nearly an hour, enlisting much applause, and all agreeing with one accord, at the finish, that they were only "too short."

A CONVENTION OF FOREST TREES.

Norway Pine (Louie).—Fellow trees of Michigan, to organize this meeting I move the election of White Oak as chairman. (Seconded.) All who favor this motion please say aye. (Unanimous vote.) Those who are opposed will say no. The ayes have it and White Oak will take the chair.

White Oak (Julius).—Fellow trees, the object of our meeting is to consider whatever may be to our best interests in the forests of Michigan. It is a subject of great importance to the State and to all of us, and we hope to gain much valuable information from each other and to hear from every one present.

We have gathered from all parts of the State for this conference. As we should keep a permanent record of our proceedings, and as the newspapers will probably wish to publish our papers and discussions, I think a secretary will be needed to take the minutes of this meeting.

Beech (Harry).—I nominate Chestnut (Lillie) to act as secretary. (Seconded.)

White Oak.—All who favor the nomination last made will say aye. Those who are opposed will say no. The ayes have it and Chestnut is elected secretary. (She takes her place.)

White Oak.—Our musician, Pine (Bessie), has kindly arranged the music for us. She sings only when the spirits move her. We may know when that is by the peculiar swaying of her head. At the swaying let us suspend business and listen. She moves—we will hear “The Echoes from the Forest.”

White Oak.—We are now ready for discussion. (Several trees rising at once.)

White Oak.—Tulip tree has the floor.

Tulip Tree (Herman).—Fellow trees, I am glad to have this opportunity to plead my qualifications as an ornamental tree. I grow to a great size and height, and have shining, queer-shaped leaves, and large tulip-shaped blossoms which remind you of the sunny South, where my sisters, the Magnolias, live.

Burr Oak (Joseph).—I should like to ask Tulip tree of what use he is? Michigan people have a right to demand of us both usefulness and beauty.

Tulip Tree.—I am not only valuable as an ornamental shade tree, but I also furnish excellent timber for carriage bodies, furniture and finishing houses. Years ago my forefathers were numerous south of the Grand River Valley, and supplied wood for laths, shingles and lumber in the place of the white pine. Our family is a small one, represented in Michigan by a single species.

White Oak.—We shall be glad to hear from any members of the Oak family who live in Michigan. (Sixteen members rise.)

White Oak.—This is certainly a large family. I recognize Chestnut as entitled to the floor. What claims have you to rank in the Oak family?

Chestnut.—All botanists of the present day agree that the Beech, the Ironwood, the blue Beech, and the Hazels and Chestnuts are first cousins to the Oaks. I live in four counties in the south-east part of the State and am well known for valuable timber and a good crop of edible nuts.

Beech.—Upon my smooth, gray bark many a heart history has been carved. The poet Campbell tells it so beautifully:

“ Thrice twenty summers have I stood,
Since youthful lovers in my shade
Their vows of truth and rapture paid,
And, on my trunk’s surviving frame,
Carved many a long forgotten name.”

And here is another beautiful thing from Whittier :

“ I have always admired the taste of the Indians around Sebago Lake, who, when their chief died, dug round the beech tree, swaying it down, and placed his body in the rent, and then let the noble tree fall back into its original place, a green and beautiful monument for a son of the forest.”

I am one of the commonest and well-known trees in Michigan.

Burr Oak.—Ten of us Oaks, out of about 300, live in this State. Brother White Oak is by far the most common and well-known. He is the senior member of our family and has attained a very great age. He never thrives in perfection except in a good soil and in a temperate climate. The Michigan people are proud that so many of our family live with them.

Tulip Tree.—White Oak is certainly loyal to his family, but I should like to hear the uses of his tree.

Burr Oak.—Every particle of him is useful, even to his ashes. His bark is used for tanning leather; his wood is hard, compact, heavy, tough and durable, good for heavy waggons, plows, railroad ties, fence posts, ship timber, furniture, and finishing the interior of houses.

Swamp White Oak (Leona).—As much of my timber is so nearly like that of White Oak, and often passes for it, I will say, as a tree, "I am beautiful in every stage of my growth; at first, light, slender, delicate and waving; at last, broad, massive and grand, but always graceful."

Chestnut Oak (James).—Emerson says of White Oak: "As an ornament to the landscape, or as a single object, no other tree is to be compared with it, in every period of its growth, for picturesqueness, majesty, and inexhaustible variety of beauty. When standing alone it throws out its mighty arms with an air of force and grandeur which have made it everywhere to be considered the fittest emblem of strength and power of resistance. Commonly the oak braves the storm to the last, without yielding, better than any other tree. The limbs go out at a great angle and stretch horizontally to a vast distance."

Laurel Oak (John).—The famous A. J. Downing said: "There are no grander or more superb trees than our American oaks. We are fully disposed to concede it the first rank among the denizens of the forest. As an ornamental object we consider the oak the most varied in expression, the most beautiful, grand, majestic and picturesque of all deciduous trees."

Black Jack Oak (Herbert).—Poetry, history, mythology and romance abound in references to the oak. I should like to hear from our fellow trees some common quotations in reference to the oak.

White Ash (Myrtie).—"The unwedgeable and gnarled oak."

Black Ash (Ella).—"The old oaken bucket."

Sugar Maple (Louise).—"Jove's own tree that holds the woods in awful sovereignty."

Red Maple (Anna).—"A goodly oak, whose boughs were mass'd with age."

Scarlet Oak (Ben.).—"King of the woods."

Blue Ash (Amy).—"Thy guardian oaks, my country, are thy boast."

Silver Maple (Kate).—"The monarch oak, the patriarch of trees."

Butternut (Burke).—"The oak for grandeur, strength and noble size, excels all trees that in the forest grow."

Black Walnut (Frank).—Tall oaks from little acorns grow."

Buttonwood (Harrison).—

" Woodman, forbear thy stroke !
Cut not its earth-bound ties ;
Oh, spare that aged oak,
Now towering to the Skies !"

Sassafras (Henry).—

" Behold yon oak,
How stern he frowns."

Pepperidge (Walter).—"The glory of the woods."

Buckeye (Samuel).—

" Proud monarch of the forest !
That once, a sapling bough,
Didst quail far more at evening's breath
Than at the tempest now.
Strange scenes have passed, long ages roll'd
Since first upon thy stem,
Then weak as osier twig, spring set
Her leafy diadem."

Red Oak (Lulu).—I begin to feel my pride rising and hope White Oak will give me a chance to quote a poem written in honor of one of our family.

White Oak.—(Bows.)

Red Oak.—

“ A glorious tree is the old gray oak ;
He has stood for a thousand years—
Has stood and frowned,
On the trees around
Like a king among his peers ;
As round their king they stand, so now,
When the flowers their pale leaves fold,
The tall trees around him stand, arrayed
In their robes of purple and gold.

“ He has stood like a tower,
And dared the winds to battle.
He has heard the hail,
And from plates of mail
From his own limbs, shaken, rattle ;
He has tossed them about, and shorn the tops,
When the storm has roused his might,
Of the forest trees, as a strong man doth
The heads of his foes in fight.”

Scarlet Oak (Otto).—That poem which Red Oak quoted reminded me of an old saying of Dr. Holmes. He says : “ I wonder if you ever thought of a single mark of supremacy which distinguishes this tree from those around it ? The others shirk the work of resisting gravity, the Oak defies it. It chooses the horizontal direction for its limbs so that their whole weight may tell, and then stretches them out 50 or 60 feet so that the strain may be mighty enough to be worth resisting. You will find that in passing from the extreme downward droop of the branches of the Weeping Willow to the extreme upward inclination of those of the Poplar, they sweep nearly half a circle. At 90 degrees the Oak stops short, to slant upward another degree would mark infirmity of purpose, to bend downward weakness of organization.”

Black Oak (Ruby).—What the Oak said sounds scientific. I want to tell you something that begins with “ once upon a time.” Once upon a time the devil agreed with a man that he should have the latter’s soul at the time when the oak leaves fell ; but when he came to look at the oak in the autumn he found it still in leaf, nor did it part with its old leaves till the new ones began to sprout. In his rage and disappointment he scratched the leaves so vehemently that they have been in consequence jagged ever since.

White Oak.—These are certainly good words for the Oak family. We will next listen to some music from the little birds—our very dear friends.

White Oak.—We shall next hear from the Maples, of which there are six in our State. They are cousins to the Buckeye, Bladdernut, and Box-elder, all of which belong to the Maple family.

Sugar Maple (Louise).—I am a favorite ornamental tree. Poets of all ages have sung about the oak. I am no Sweet Singer of Michigan, but I am possessed of sweetness. I claim to have made more boys and girls happy than any other tree. I have many changes in dress—wearing in spring the softest shade of every color ; in the summer the purest emerald, and in the autumn the most brilliant yellow. My wood is used for furniture, floors, and for furnishing the interior of houses, and after the houses are finished few can warm them better than I.

Red Maple (Mary).—I am often called Soft Maple, a name also applied to one of my sisters. I beautify the country in spring with early red blossoms, and in autumn my leaves are streaked with scarlet.

Silver Maple (Jennie).—My sister Red Maple and myself are both called Soft Maple. I make a very rapid growth and am found by the side of streams. I am often planted as a shade tree, and in the far West many are planted for shelter belts and for timber.

Bass Wood (Maud).—I am a fine shade tree, my home a moist rich soil. My fragrant flowers furnish a great amount of excellent honey for the bees at a time when most other flowers have disappeared. My timber is soft, light and tough, and not apt to split, good for cabinet work, boxes, broom handles, etc.

Black Cherry (Ethel).—With our beautiful blossoms we need not be envious of the orange groves of California. I am one large snowball of blossoms in the spring. My fruit is much liked by the birds, and my wood is fine, light, durable and looks much like mahogany. My cousins are the wild plum, crab-apple, mountain ash, hawthorn, Juneberry, spiræa, the apple, pear, quince, and the peach, and we all belong to the Rose family.

Black Walnut (Frank).—I am not ornamental, nor am I a good neighbor, for I sometimes poison other trees that live near me. In spite of my bad qualities I am liked because I can be converted into cash at any moment. Some of my brothers have sold as high as \$2,000. Those who care for us care for a fortune. My relative, the Butternut, is much loved by boys and girls. It was round my brother at Haverstraw, on the Hudson, that Gen. Wayne mustered his forces at midnight, preparatory to his attack on Stony Point.

Hickory (Ray).—There are four brothers of us in Michigan, but I am the least worthy of them all, and am the only one present at this convention. We are cousins of the Walnut and Butternut and all belong to the Walnut family. If you want a wood that is good for buggies, axe handles, barrel hoops, a wood like iron, call upon my brother, the Shag-bark. You will have all the nuts you want thrown into the bargain. Once upon a time there was a president of the country who had so many of my qualities that they called him Old Hickory.

White Oak.—We will sing about the “echo which in the forest dwells.”

White Oak.—We will next hear a few words from the Ashes. (Three rise and stand till all are through.)

White Ash (Myrtie).—I am a tall tree and have often been complimented for my usefulness. I have been told that I have a graceful top and beautiful pinnate leaves. My wood is heavy, hard, strong, coarse-grained, compact, and of a brown color, and is much used for cabinet ware, farm implements, and house finishing. I thrive on rich, moist soil.

Blue Ash (Amy).—I am not often found in Michigan. I grow slowly and attain a good size. My wood is valuable for lumber, posts and sills. I may be distinguished from all other Ashes by the square branches of a year's growth.

Black Ash (Ella).—I thrive in swamps and along streams, and become a large, useful tree. My wood is used for furniture, barrel hoops and baskets. When well cared for I become one of the finest ornamental trees. For this purpose I have never been fully appreciated. The Ashes belong to the Olive family. We have been called musical, as in this quotation :

“ Ye Ashes wild resounding o'er the steep,
Delicious is your music to the soul.”

White Oak.—Who will speak next? (A number rise.) Birch has the floor.

Birch (William).—I am a useful factor in the cause of education, though not now so commonly found in the school room as in former years. There are five sisters of us Birches in Michigan. The Alders are our cousins. Probably you are best acquainted with the Canoe Birch, whose white wood you see in spools and shoe pegs. It gives up its beautiful white dress without any injury to itself. Longfellow has made us a celebrated family in Hiawatha. He says of us :

“ Give me your bark, O, Birch tree!
Of your yellow bark, O, Birch tree!
Growing by the rushing river,
Tall and stately in the valley!
I a light canoe will build me,
That shall float upon the river,
Like a yellow leaf in autumn,
Like a yellow water lily!
Lay aside your cloak, O, Birch tree!
Lay aside your white skin wrapper,
For the summer time is coming,
And the sun is warm in heaven,
And you need no white skin wrapper.”

White Oak.—Let us hear from the Elms.

American Elm (Lida).—I have been called the Queen of the Forest, and stand without a rival at the head of the list of ornamental deciduous leaved trees. I claim this rank on account of hardiness, rapid growth, and the graceful and majestic beauty of my drooping branches. We are very proud of our Massachusetts relative under whose venerable shade Washington first took command of the Continental army, July 3, 1775. How the affection of every lover of his country clings around that tree! What care has been taken of it, what marks of esteem have been shown it by the citizens of Cambridge, may be judged by those who have seen it standing, as it does, in the centre of a great public thoroughfare, its trunk protected by an iron fence from injury by passing vehicles, which for more than a century have turned out in deference to this monarch of the Revolution.

Red Elm (Claude).—I am well known for my durable red wood and mucilaginous bark and am often called "Slippery Elm." My sister, Rock Elm, is a fine tree with corky branches, and the wood is valuable for farm implements.

Hackberry (Otis).—I am one of the poor cousins of the Elms, and am little known. I am sometimes called the Nettle tree, and I am afraid Michigan people are not on speaking terms with me. Allow me to tell you about my German relative, the Luther Elm, near Worms. It is said to have been planted as follows: A bigoted old Catholic lady, thrusting a stick in the ground, declared her resolution not to accept the new faith till that dry stick became green. The fact that it did so proved the interest taken by trees in the preservation of orthodoxy.

Red Mulberry (Robert).—I am another obscure cousin of the Elms and not often seen in Michigan. The birds are fond of my berries and the wood is as valuable as cedar for posts. Let me praise the Elm.

“ Hail to the Elm ! the brave old Elm !
 Our last lone forest tree,
 Whose limbs outstand the lightning’s brand,
 For a brave old Elm is he !
 For fifteen score of full-told years,
 He has borne his leafy prime,
 Yet he holds them well, and lives to tell
 His tale of the olden time !”

White Oak.—Let us all repeat the lines of N. S. Dodge in praise of the Queen of the Forest.

“ Then hail to the elm ! the green-topp’d elm !
 And long may his branches wave,
 For a relic is he, the gnarl’d old tree,
 Of the times of the good and brave.”

White Oak.—We will have another song about the birds (or any other subject).

White Oak.—We have heard nothing from the Willows.

Willow (Marion).—I live near the water and my wood is made into the strangest things, artificial limbs, tooth-picks, ball clubs and gunpowder. Some of us are called "Pussy Willows."

Elizabeth Allen has written this lovely poem to my sister, the Weeping Willow of Europe, who has been for years mourning something to us unknown.

“ O, Willow, why forever weep,
 As one who mourns an endless wrong !
 What hidden woe can lie so deep ?
 What utter grief can last so long ?
 Mourn on forever, unconsoled,
 And keep your secret, faithful tree !
 No heart in all the world can hold
 A sweeter grace than constancy.”

The Poplar (Cara).—There are five sisters of us Poplars who live in Michigan. One is called Cotton Wood, and two are called Aspens. We are cousins of the Willows and all belong to the Willow family. I will read some lines of the poets:

“ Why tremble so, broad Aspen-tree?
Why shake thy leaves ne'er ceasing?
At rest thou never seem'st to be,
For when the air is still and clear,
Or when the nipping gale, increasing,
Shakes from thy boughs soft twilight's tear,
Thou tremblest still, broad Aspen-tree,
And never tranquil seem'st to be.”

White Oak.—We ought to hear from Red Bud and Sassafras and Pepperidge and Buttonwood or Sycamore, who live in our forests, but they do not appear to be present at this convention. Our exercises would not be complete without hearing from the members of the Pine family or cone bearing trees.

White Pine (Sylvia).—I am one of the tallest and largest, most common, well known and valuable trees of the State. In Europe, where some of my number have been introduced, they often call me Weymouth Pine. My leaves are long, light green and in clusters of five. As a long-lived and beautiful tree for ornamenting rural grounds and parks, I take a high rank, while an immense amount of valuable lumber is cut from my wood.

White Oak.—Let us hear from another Pine of Michigan.

Red Pine (Naoma).—I am often called Norway Pine, though I do not know why. I never lived in Norway, but am only found in North America. I am a tall, straight tree, with long evergreen leaves in clusters of two. I grow slowly, making valuable timber, which is much harder than that of White Pine. For ornamental purposes I much resemble Austrian Pine, though much superior to that tree, if we rely on the opinions of noted horticulturists.

White Oak.—The White Pine and Red Pine have a sister Pine in Michigan. We shall now give her an opportunity to speak.

Grey Pine (Rose).—I am a tree of small size, found on poor land in Northern Michigan. When young my growth is rapid; my leaves grow in pairs and are quite short. My wood abounds in pitch. I am known by a variety of names, as Scrub Pine, Jack Pine, Buckwheat Pine, Black Pine, Crocodile Pine, but the name I like the best is *Pinus Banksiana*.

I want to tell you what Ruskin says: “The tremendous unity of the pine absorbs and molds the life of a race. The pine shadows rest upon a nation. The Northern people, century after century, lived under one or other of the two great powers of the pine and the sea, both infinite. They dwelt amidst the forests or they wandered on the waves, and saw no end or any other horizon. Still the dark green trees, or the dark green waters jagged the dawn with their fringe of their foam, and whatever elements of imagination or of warrior strength or of domestic justice were brought down by the Norwegian or the Goth against the dissoluteness or degradation of the south of Europe, were taught them under the green roofs and wild penetralia of the pine.”

White Oak.—We have another cone-bearing tree in attendance. I call on

Hemlock Spruce (Agnes).—I have been called by students in art and botany and horticulture “the most beautiful coniferous hardy tree yet known.” I grow to a good height and require a large size. My evergreen leaves have delicate tints, my young branches droop gracefully. As a timber tree I do not claim the highest honor. My bark is valuable for tanning leather.

White Oak.—There are two other sister evergreens called “Spruces” I see in the audience.

Black Spruce (Rhoda).—I abound in swamps in Northern Michigan. I am often used for Christmas trees on festive occasions, and boys and girls search me over for a supply of first-class gum. I am not responsible, though, for all the gum that goes by my name. Within a few years my wood has been largely used to make white paper.

White Oak.—I recognize another evergreen. I call on

Red Cedar (Clara).—In summer my leaves are beautiful, but in winter they become brown. I am found only sparingly in any part of the world, though I am the most widely distributed of any tree in the United States. I grow slowly and produce a beautiful red, fragrant wood, which is soft and very durable. My wood is now mainly limited to the making of lead pencils.

White Oak.—Let us next hear from

Balsam Fir (Alice).—I am a rather small, slender evergreen found in swamps, though often cultivated as an ornament about dwellings. I arrive at my prime when about fourteen years old.

White Oak.—I shall now call on

Arbor Vitæ (Maud).—I thrive in the swamps of the North and afford shelter to wild animals. I am often called white cedar and I furnish most of the telegraph poles, some fence posts, railway ties and blocks for paving streets. I take a high place as an ornamental tree.

White Oak.—We have now heard from all of the cone-bearing evergreen trees who are present. There is another tree of the State, not here present, which is cone-bearing, and belongs to the Pine family. I refer to the tamarack.

There are some other matters appropriate to Arbor Day which should demand our attention at this time. How do the trees of Michigan compare in beauty and variety with those of Great Britain of which we read so much?

Susie.—The farther north we go the fewer kinds of trees we find; the farther south, the greater the variety. Great Britain and Ireland contain more than twice the area of Michigan. They have one basswood, not so good as ours; one very small maple, one cherry, one small ash, two elms, two poplars, one beech, one small birch, one pine, one oak much like our white oak. Great Britain has about ten species of trees native to her soil, while Michigan, with half the territory, has about ninety species, or nine times as great a variety.

White Oak.—For some interesting points in reference to nuts and seeds I call on

Red Maple.—Last autumn the hazels, beeches, chestnuts, oaks, hickories, walnuts and buckeyes, matured their fruit, and with this maturing the burs, or cups, or husks, opened or the stems snapped in two at a joint which began to form months before. If a bur or nut held fast too tenaciously, the frost made it willing to drop, and down it went with hundreds of others, among the leaves.

The leaves, with the help of the shifting winds, gently covered the fruit—or some portions of it. The leaves make the best kind of protection from dry air and severe cold, and they come just at the right time. All the seeds are not covered, but Dame Nature is generous. She produces an abundance; enough for seed and enough to feed the birds, squirrels, and other animals.

White Oak.—We want to hear a word about Nature's tree-planters, the squirrels, birds and other animals.

Basswood.—The squirrels eat many nuts, but carry a portion to some distance in every direction, where they plant one or two in a place. It may be the thought of the squirrel to return at some future time of need, but his bump of locality is not well developed or he has laid up more than he needed. At all events some of the nuts are allowed to remain where he planted them. In this way he is a benefit to the trees, and pays for the nuts which he eats. He has not lived in vain, for he is a tree-planter and believes in arboriculture. His arbor days come in autumn, and he needs no gubernatorial message to stimulate him to work.

White Oak.—This subject will be continued by

White Spruce (Adeline).—Many of our trees and shrubs produce a fleshy fruit or berry. Among them are the mountain ash, service berry, wild crab apple, hawthorn, cherry, holly, viburnum, pepperidge, hackberry, mulberry, sassafras, wild plum, persimmon, paw paw, cedars and junipers. Many of these when ripe are rendered conspicuous by brilliant colors. The fruits are eagerly sought by grouse, turkeys, deer, bear, or other

animals. In most cases the seeds of such fruits are protected by a very firm covering and are not digestible. They are sown broadcast by wild animals under circumstances most favorable for germination. The birds, too, belong to the society of tree-planters.

White Oak.—We will next listen to some accounts of the wind as a sower of seeds.

Sassafras (Iona).—Some trees produce dry seeds or seed-pods, and usually drop only a portion in autumn. They hold on to some seeds with considerable tenacity. Among these are the buttonwood, basswood, ironwood, blue beech, box-elder, hop tree, tulip tree, the ashes, catalpa, locust, Judas tree, birches, alders, larches, pines, spruces. The fruit or the seed is thin, or provided with wings, which distribute them as they fall, or after they have fallen. In winter it needs but a slight packing of the snow to bear up the seeds. At such times, some of the seeds are torn from the trees by the wind, and may be seen sliding along like miniature ice boats, often half a mile or more from the nearest tree. The wind also aids in transporting the seeds of our elms, maples, willows and poplars.

White Oak.—Next listen to something more about seeds.

Red Bud (Cynthia).—A seed is a young plant and is packed ready for transportation. It has a tiny stem, some seed leaves and a terminal bud. The mother tree, before casting off her progeny into the world, did not fail to give it a little outfit in the form of starch for food stored up in or surrounding the thick seed leaves. As the young chicks while in the shell are nourished by the yolk of the egg, so the young oak or maple subsists on the starch stored up before ripening.

White Oak.—When do our trees make their growth and how do they get ready for the next year?

Box Elder (Nina).—Most of our trees put forth their new growth during a few weeks in spring or early summer. Do you wonder what they are doing during the rest of the warm weather? They are by no means idle. They may be perfecting flowers and seeds, but all of them are getting ready for the next winter and spring. Through the influence of light and heat, the green leaves are forming starch which is transported and stored in the pith, young wood and bark. The young leaves and stems are started and arranged, packed in cotton, covered by scales and in some cases the scales are protected by pitch or varnish.

White Oak.—Next in order will be a few words in regard to the tree as a community.

Buckeye (Douglass).—A tree is a composite being, a kind of community by itself. The leaves and limbs are all the time striving with each other to see which shall have the most room and the most sunshine. Each strives for all it can get. While some perish in the attempt, or meet with only very indifferent success, the strongest of the strongest buds survive. Each leaf helps to sustain the limb which carries it, and each limb furnishes some nourishment to the common trunk for the common welfare. The tax is always adjusted according to the ability of each to contribute. As the limbs of a tree are striving for the mastery, so each bush and tree in grove or forest is striving with others for the mastery. The weakest succumb to the strongest; some perish early, some lead a feeble existence for many years, while even the strongest are more or less injured. With plenty of room, the trunk will be short, the branches many and widespread; where crowded, the lower limbs perish for want of light. Dead limbs fall to the ground to protect and enrich it for nourishing the surviving limbs and the trunk. The scars heal over, more limbs perish as new ones creep upward, and thus we find tall, clean trunks in a dense forest.

White Oak.—To be successful, it is very important to know how to gather and care for seeds and nuts.

Yellow Wood (Robert).—Gather the seeds or nuts of trees when ripe and, if convenient, plant them where the trees are expected to remain. In this list we include especially the trees which have long tap roots, and do not easily transplant, such as the tulip tree, the hickories, the oaks, the walnuts, and chestnuts. The seeds of elms and maples are not easily kept over winter. Seeds of evergreens, the larch, and the locusts may be dried and kept as grain is kept. Many seeds and nuts may be mixed with an equal bulk of sand as it is dug from a knoll, and buried a few inches or a foot below the

surface. In spring they may be carried to the garden and planted. Soak seeds of locust and honey locust in hot water till the outer covering softens, and then plant. Soak seeds of evergreens three or four days in water, changed daily, and then plant very shallow in rows a few inches apart in rich loam, well screened by lath, brush or muslin. See that weeds do not rob the young plants of light, room and nourishment. Evergreens in small quantity, when small and two or three years old, can be purchased of experts more cheaply than they can be raised at home. These can be set in rows and cultivated for a few years like Indian corn. For further details you are advised to read copies of our State horticultural reports, take lessons of a nurseryman, or go to the Agricultural College.

White Oak.—It is of little use to plant seeds or buy trees, unless we know how to handle them while moving.

Kentucky Coffee Tree (Hiram).—In taking up a tree, whether large or small, do not twist it about so as to break or bend the roots abruptly. Get all the roots you can afford to, remembering that a tree will not grow without roots.

When out of the ground keep the roots constantly covered with soil, moss, damp straw or something else. The roots are far more sensitive to dry air than are the parts above ground. No one need wonder that trees carted into town with short roots exposed to dry air often fail to grow or lead a precarious life for years. Study the structure and the physiology of a tree and treat it as one who always makes everything thrive which he cares for.

White Oak.—How shall we care for the trees after planting?

Apple Tree (Hannah).—To set a tree so as to ensure its thrifty growth, place it but little deeper than it was while growing. Have the soil well pulverized and pack it closely about the tree.

After all this trouble, do not court disappointment in the slow growth or in the death of a favorite tree, but dig or rake the ground every week or two all summer for three to five years for a distance of four feet or more each way from the tree. If this is impracticable, place a mulch of something covering the space above mentioned.

White Oak.—After planting, trees sometimes become too thick. What shall we do?

Pear Tree (Andrew).—A tree, like a child, is a living, organized being and keeps changing as long as life lasts. It is not best merely to set as many trees as we expect to remain for a life time, but plant them more thickly with a view to removal. Here is where 99 out of 100 fail. They do not keep an eye on the growth and trim or remove trees until they have crowded and damaged each other beyond recovery. In most instances, a few large, well developed trees should grow where many small ones were planted years before. It needs courage and judgment to remove some favorite trees that others may continue to spread and make a symmetrical growth.

White Oak.—Next will follow something in reference to the flowers of trees.

Bitternut (Silas).—With rare exceptions, our trees bear flowers which are inconspicuous. The elms and the maples produce flowers in spring before the leaves appear. Most have the staminate and pistillate flowers on different parts of the tree or on different trees. The wind or gravity carries the pollen to the pistil, so there is no need of sweet odors or a gay display of flowers to attract bees and butterflies and moths to carry the pollen. Compensation is well displayed in nature. If the tree has not gorgeous or fragrant flowers, it has a large size and often a beautiful form.

White Oak.—We should learn to love trees and to associate them with the generous hand who planted and cared for them.

Wild Plum (Ezra).—I will tell you something which was written by Washington Irving: "There is something noble, simple and pure in a taste for trees. It argues, I think, a sweet and generous nature to have this strong relish for the beauties of vegetation, and this friendship for the hardy and glorious sons of the forest. There is a grandeur of thought connected with this part of rural economy. It is worthy of liberal, and free-born, and aspiring men. He who plants an oak looks forward to future ages, and plants for posterity. Nothing can be less selfish than this. He cannot expect to sit in its shade nor enjoy its shelter; but he exults in the idea that the acorn which he has buried in the earth shall grow up into a lofty pile, and shall keep on flourishing and increasing and benefiting mankind long after he shall have ceased to tread his paternal fields."

White Oak.—We will hear what O. W. Holmes says on this subject.

Tamarack (Elias).—Dr. O. W. Holmes says: "I have written many verses, but the best poems I have produced are the trees I planted on the hillside which overlooks the broad meadows, scalloped and rounded at their edges by loops of the sinuous Housatonic. Nature finds rhymes for them in the recurring measures of the seasons. Winter strips them of their ornaments and gives them, as it were, in prose translation, and summer reclothes them in all the splendid phrases of their leafy language."

"What are these maples and beeches and birches but odes and idyls and madrigals? What are these pines and firs and spruces but holy rhymes, too solemn for the many-hued raiment of their gay deciduous neighbors?

"As you drop the seed, as you plant the sapling, your left hand hardly knows what your right hand is doing. But Nature knows, and in due time the power that sees and works in secret will reward you openly."

White Oak.—This concludes what we had on the programme for this convention.

Hemlock.—I move we have some more music and then adjourn.

White Oak.—If there be no objections we shall have the music.

White Oak.—This convention stands adjourned until again convened by the proper authorities.

II.—STATUTORY PROVISIONS.

It is provided by the Agriculture and Arts Act, 49 Victoria, chap. 11 (1886), that the Fruit Growers' Association should be a body corporate, comprising not less than fifty members, each paying an annual subscription fee of not less than \$1; that it shall hold an annual meeting at such time and place as may be determined upon; that the retiring officers shall at such meeting present a full report of their proceedings, and of the proceedings of the Association, and a detailed statement of its receipts and expenditure for the previous year, duly audited by the Auditors; that the Association shall at such meeting elect a President, a Vice-President, and one Director from each of the Agricultural Divisions of the Province (mentioned in Schedule A following), and the officers and Directors so elected shall appoint from among themselves, or otherwise, a Secretary and a Treasurer, or a Secretary-Treasurer; and that the Association shall also elect two Auditors.

Vacancies occurring through death, resignation, or otherwise in the directorate of the Fruit Growers' Association, shall be filled by the Board of Directors.

The officers shall have full power to act for and on behalf of the Association, and all grants of money and other funds of the Association shall be received and expended under their direction, subject nevertheless to the by-laws and regulations of the Association.

A copy of the Annual Report of its proceedings, a statement of receipts and expenditure, a list of the officers elected, and also such general information on matters of special interest as the Association have been able to obtain, shall be sent to the Commissioner of Agriculture within forty days after the holding of such annual meeting.

III.—SCHEDULE A.—AGRICULTURAL DIVISIONS.

1. Stormont, Dundas, Glengarry, Prescott and Cornwall.
2. Lanark North, Lanark South, Renfrew North, Renfrew South, Carleton, Russell and the City of Ottawa.
3. Frontenac, City of Kingston, Leeds and Grenville North, Leeds South, Grenville South and Brockville.
4. Hastings East, Hastings North, Hastings West, Addington, Lennox and Prince Edward.
5. Durham East, Durham West, Northumberland East, Northumberland West, Peterborough East, Peterborough West, Victoria North (including Haliburton), and Victoria South.
6. York East, York North, York West, Ontario North, Ontario South, Peel, Cardwell and City of Toronto.
7. Wellington Centre, Wellington South, Wellington West, Waterloo North, Waterloo South, Wentworth North, Wentworth South, Dufferin, Halton and City of Hamilton.
8. Lincoln, Niagara, Welland, Haldimand and Monck.
9. Elgin East, Elgin West, Brant North, Brant South, Oxford North, Oxford South, Norfolk North and Norfolk South.
10. Huron East, Huron South, Huron West, Bruce Centre, Bruce North, Bruce South, Grey East, Grey North and Grey South.

-
11. Perth North, Perth South, Middlesex East, Middlesex North, Middlesex West and City of London.
 12. Essex North, Essex South, Kent East, Kent West, Lambton East and Lambton West.
 13. Algoma East, Algoma West, Simcoe East, Simcoe South, Simcoe West, Muskoka and Parry Sound.
-

IV.—CONSTITUTION OF THE ASSOCIATION.

Art. I.—This Association shall be called “The Fruit Growers’ Association of Ontario.”

Art. II.—Its objects shall be the advancement of the science and art of fruit culture by holding meetings for the Exhibition of fruit and for the discussion of all questions relative to fruit culture, by collecting, arranging and disseminating useful information, and by such other means as may from time to time seem advisable.

Art. III.—The annual meeting of the Association shall be held at such time and place as shall be designated by the Association.

Art. IV.—The officers of the Association shall be composed of a President, Vice-President, a Secretary, or Secretary-Treasurer, and thirteen Directors.

Art. V.—Any person may become a member by an annual payment of one dollar, and a payment of ten dollars shall constitute a member for life.

Art. VI.—This Constitution may be amended by a vote of a majority of the members present at any regular meeting, notice of the proposed amendments having been given at the previous meeting.

Art. VII.—The said Officers and Directors shall prepare and present to the annual meeting of the Association a report of their proceedings during the year, in which shall be stated the names of all the members of the Association, the places of meeting during the year, and such information as the Association shall have been able to obtain on the subject of fruit culture in the Province during the year. There shall also be presented at the said annual meeting a detailed statement of the receipts and disbursements of the Association during the year, which report and statement shall be entered in the journal and signed by the President as being a correct copy; and a true copy thereof, certified by the Secretary for the time being, shall be sent to the Commissioner of Agriculture within forty days after the holding of such annual meeting.

Art. VIII.—The Association shall have power to make, alter and amend By-laws for prescribing the mode of admission of new members, the election of officers, and otherwise regulating the administration of its affairs and property.

V.—BY-LAWS.

1. The President, Vice-President and Secretary-Treasurer shall be *ex-officio* members of all committees.

2. The directors may offer premiums to any person originating or introducing any new fruit adapted to the climate of the Province which shall possess such distinctive excellence as shall, in their opinion, render the same of special value; also for essays upon such subjects connected with fruit-growing as they may designate, under such rules and regulations as they may prescribe.

3. The Secretary shall prepare an annual report containing the minutes of the proceedings of meetings during the year; a detailed statement of receipts and expenditure; the reports upon fruits received from different localities; and all essays to which prizes have been awarded, and such other information in regard to fruit culture as may have been received during the year, and submit the same to the Directors or any Committee of Directors appointed for this purpose, and, with their sanction, after presenting the same at the annual meeting, cause the same to be printed by and through the Publication Committee, and send a copy thereof to each member of the Association and to the Commissioner of Agriculture.

4. Seven Directors shall constitute a quorum, and if at any meeting of Directors there shall not be a quorum, the members present may adjourn the meeting from time to time until a quorum shall be obtained.

5. The annual subscription shall be due in advance at the annual meeting.

6. The President (or in case of his disability, the Vice-President) may convene special meetings at such times and places as he may deem advisable, and he shall convene such special meetings as shall be requested in writing by five members.

7. The President may deliver an address on some subject relating to the objects of the Association.

8. The Treasurer shall receive all moneys belonging to the Association, keep a correct account thereof, and submit the same to the Directors at any legal meeting of such Directors, five days' notice having been previously given for that purpose.

9. The Directors shall audit and pass all accounts, which, when approved of by the President's signature, shall be submitted to and paid by the Treasurer.

10. It shall be the duty of the Secretary to keep a correct record of the proceedings of the Association, conduct the correspondence, give not less than ten days' notice of all meetings to the members, and specify the business of special meetings.

11. The Directors, touching the conduct of the Association, shall at all times have absolute power and control of the funds and property of the Association, subject however to the meaning and construction of the Constitution.

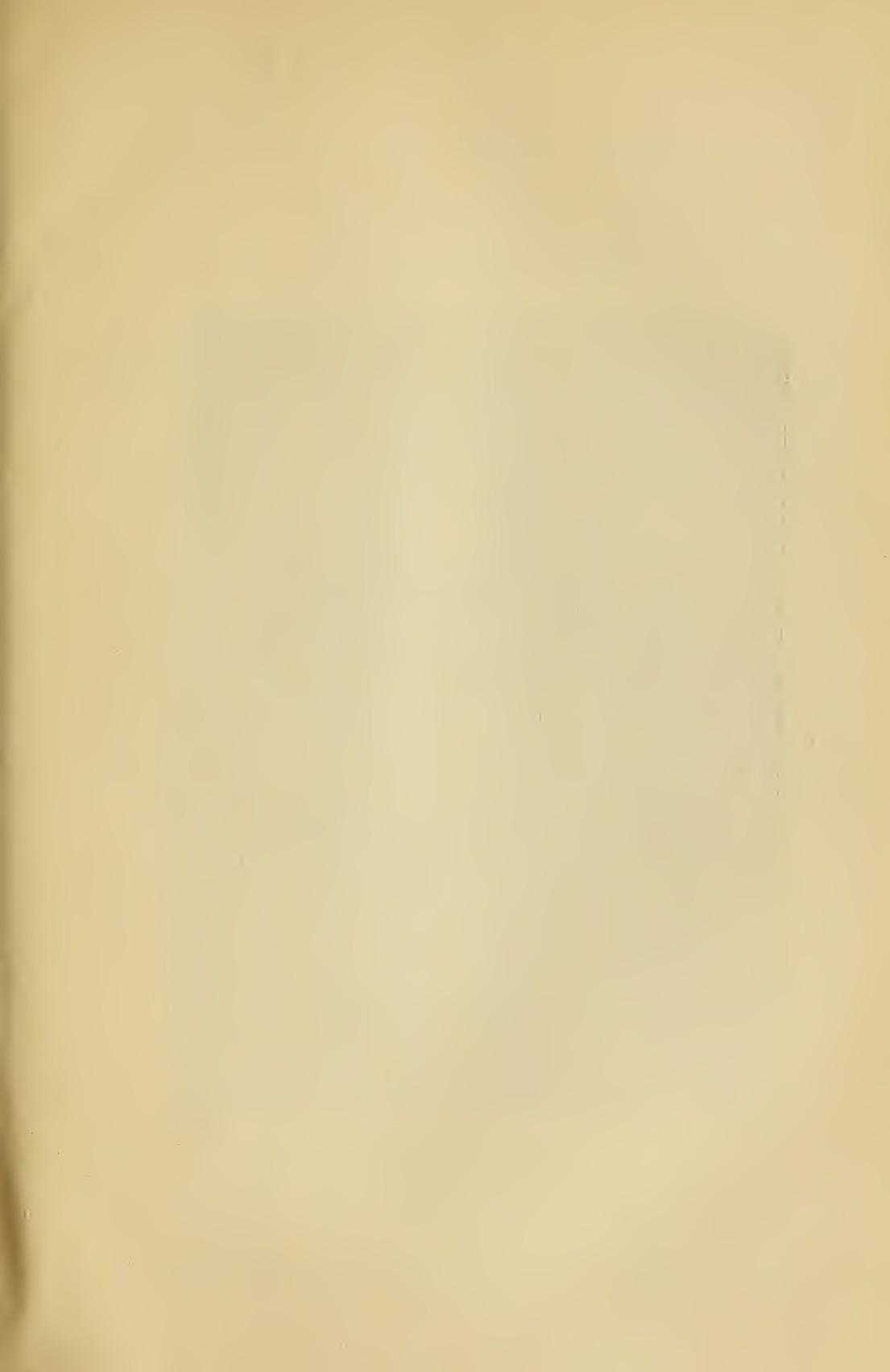
12. At special meetings no business shall be transacted except that stated in the Secretary's circular.

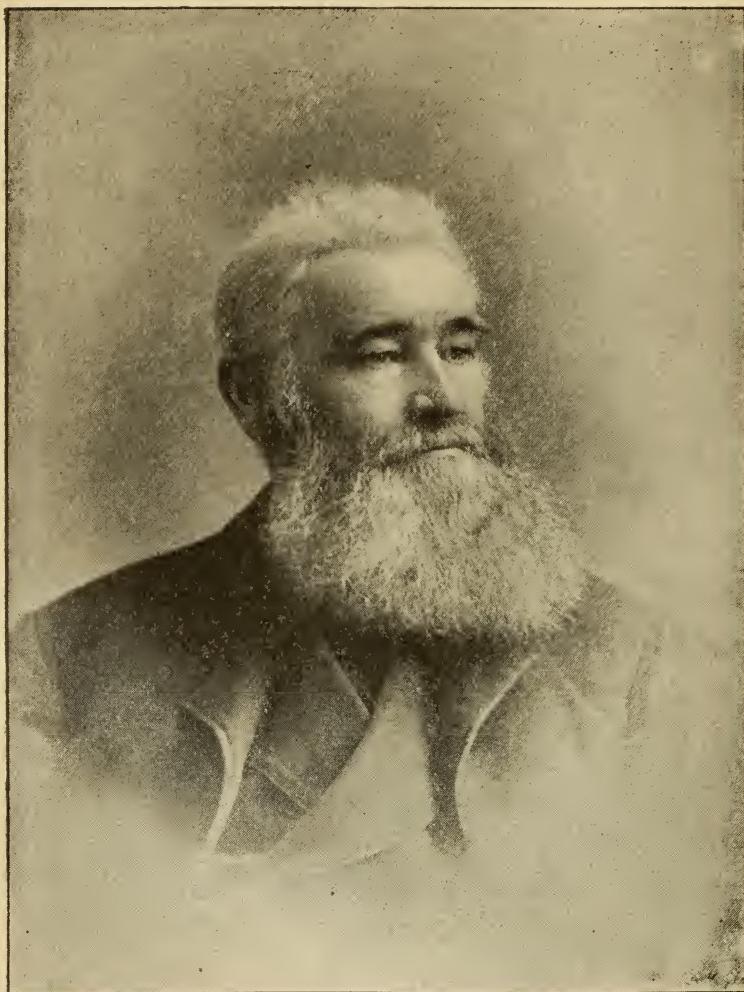
13. The order of business shall be : (1) Reading of the minutes ; (2) Reading of the Directors' Report ; (3) Reading of the Treasurer's Report ; (4) Reading of prize essays ; (5) President's Address ; (6) Election of officers, and (7) Miscellaneous business.

14. These By-laws may be amended at any general meeting by a vote of two-thirds of the members present.

15. Each member of the Fruit Committee shall be charged with the duty of accumulating information touching the state of the fruit crop, the introduction of new varieties, the market value of fruits in his particular section of the country, together with such other general and useful information touching fruit interests as may be desirable, and report in writing to the Secretary of the Association on or before the fifteenth day of September in each year.

The President, Vice-President and Secretary shall be *ex-officio* members of the Board of Directors and of all Committees. The reasonable and necessary expenses of Directors and officers in attending meetings of the Board of Directors and of Committees shall be provided from the funds of the Association.





WM. H. MILLS.
President 1868-1869.

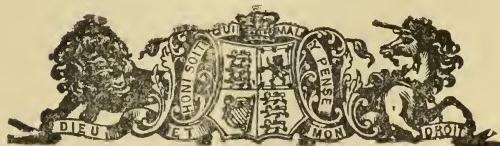
TWENTY-FIRST ANNUAL REPORT

OF THE

FRUIT GROWERS' ASSOCIATION
OF ONTARIO.

1889.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.



TORONTO:

PRINTED BY WARWICK & SONS, 68 AND 70 FRONT STREET WEST,
1890.

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* This matter should have followed on page 68.

TWENTY-FIRST ANNUAL REPORT

OF THE

FRUIT GROWERS' ASSOCIATION OF ONTARIO,

1889.

To the Hon. Charles Drury, Minister of Agriculture:

SIR,—I have the honor of submitting to you the Twenty-first Annual Report of the Fruit Growers' Association of Ontario, in which you will find a carefully prepared report of the important papers and discussions on fruit culture, floriculture and forestry, which were taken up at our Winter Meeting in the City of Hamilton, and our Summer Meeting in the Town of Seaforth. It also contains an account of the Annual Meeting at Windsor, the president's annual address, and the officers for the year 1890.

You will be pleased to find that the plans proposed for the increased usefulness of our Association are being carried out. Arrangements have been made to send out eleven of our directors to speak at Farmers' Institutes on the subjects connected with fruit culture and forestry, and it is hoped that in this way this important industry will receive a real encouragement.

The *Canadian Horticulturist* has been enlarged and improved, and during the coming fruit season it is proposed to send out a supplement in the shape of a weekly bulletin, giving reports of both home and foreign markets.

Hoping that our work may receive your hearty approval,

I am, Sir,

Your obedient servant,

L. WOOLVERTON,
Secretary.

Grimsby, Ont., Dec., 1889.

OFFICERS FOR 1890.

PRESIDENT :

A. M. Smith St. Catharines.

VICE-PRESIDENT :

J. A. Morton Wingham

SECRETARY-TREASURER AND EDITOR :

Linus Woolverton, M.A. Grimsby.

DIRECTORS :

Agricultural Division No. 1	John Croil, Aultsville, Ont.
Agricultural Division No. 2	P. E. Bucke, Ottawa, Ont.
Agricultural Division No. 3	D. Nichol, Cataraqui, Ont.
Agricultural Division No. 4	P. C. Dempsey, Trenton.
Agricultural Division No. 5	Thos. Beall, Lindsay, Ont.
Agricultural Division No. 6	W. E. Wellington, Toronto, Ont.
Agricultural Division No. 7	M. Pettit, Winona, Ont.
Agricultural Division No. 8	A. H. Pettit, Grimsby.
Agricultural Division No. 9	J. K. McMichael, Waterford, Ont.
Agricultural Division No. 10	A. McD. Allan, Goderich, Ont.
Agricultural Division No. 11	T. H. Race, Mitchell, Ont.
Agricultural Division No. 12	N. J. Clinton, Windsor, Ont.
Agricultural Division No. 13	G. C. Caston, Craighurst, Ont.

AUDITORS :

James Goldie	Guelph.
J. M. Denton	London.

THE ANNUAL MEETING.

The annual meeting of the Fruit Growers' Association of Ontario was held in the Music Hall, Windsor, on Tuesday, the 10th December, 1889, at 8 o'clock p.m.

The President, A: McD. Allan, occupied the chair.

The minutes of the last annual meeting was read by the Secretary, and approved.

The Treasurer's report, duly audited, was read by the Secretary-Treasurer and adopted.

On motion of Mr. J. M. Denton, London, seconded by Mr. Thomas Beall, Lindsay, it was resolved that since it is desirable that the Treasurer's report end on December 1st instead of September 1st, therefore that two auditors be appointed to audit the accounts of the Secretary-Treasurer from September 1st, 1889, to December 1st, 1889.

The President then appointed Messrs. Wm. Saunders, of Ottawa, and James Goldie, of Guelph, as auditors for this purpose.

The President read his annual address, which received the closest attention.

Mr. A. McNeill, Windsor, said that several points in the address should be noticed, for instance, the study of horticulture in our public schools. He thought the Association should express itself in favor of this study being introduced into the schools.

The Secretary stated that a letter had been received from the Minister of Education and read at the Hamilton meeting, to the effect that a book was in preparation for use in the schools which would take up the subjects of both agriculture and horticulture.

Mr. N. J. Clinton, Windsor, said that he once attended a school in which a book on agriculture was introduced, but it took the shape of agricultural chemistry. Such a book is too deep for public schools, and would be more suitable in a high school.

Mr. T. H. Race, of Mitchell, was of the opinion that the best place in which to teach the children horticulture, was in the garden at home. At one time he was in the habit of giving away the surplus fruit of his garden, but of late he had given his children the privilege of gathering and marketing both fruits and flowers, and sharing the profits. By such means, he thought, the subject could be taught much more effectively than by introducing a text book into our schools, whose list of subjects is already overcrowded.

On motion, a committee consisting of A. M. Smith, J. A. Morton and Prof. Saunders was appointed by the chairman to prepare an obituary notice of the Rev. R. Burnet.

The following resolution was presented by them and was adopted unanimously by the Association.:

Resolved, that we the officers and members of the Fruit Growers' Association of Ontario have learned with deep regret of the death of the Rev. R. Burnet, one of the former Presidents of this Association, who during his term of office manifested such zeal in advancing the welfare of our organisation. By his enthusiastic advocacy of the fruit interests of this province, he did much to stimulate fruit culture, while his uniform urbanity and genial bearing in the chair, won him the esteem of all.

We tender our sincere sympathies to his widow and family in their bereavement.

Resolved, that the Secretary be requested to transmit a copy of the above resolutions to the widow of our late lamented President.

J. A. MORTON,
A. M. SMITH,
WM. SAUNDERS

The nominating committee presented their report, recommending the following elections, viz.:—*President*, A. M. Smith; *Vice-President*, J. A. Morton; *Directors*, John Croil, P. E. Bucke, D. Nichol, P. C. Dempsey, Thos. Beall, W. E. Wellington, M. Pettit, A. H. Pettit, J. K. McMichael, A. McD. Allan, T. H. Race, N. J. Clinton, G. C. Caston; *Auditors*, James Goldie, J. M. Denton. After the names had been voted upon *seriatim* the report was adopted.

At a meeting of the Directors, held subsequent to the election, L. Woolverton, of Grimsby, was re-appointed secretary-treasurer and editor of the *Canadian Horticulturist*.

A fruit committee was appointed by the chair, consisting of A. H. Pettit, A. McD. Allan, and W. W. Hillborn.

TREASURER'S REPORT FOR THE YEAR 1888-9.

To the President and Directors of the Fruit Growers' Association:

GENTLEMEN—We, the undersigned auditors, have gone carefully over the Treasurer's account for the year 1888-9, have compared the vouchers with the items of expenditure,

and find them correct, showing receipts amounting to \$4,813.52, and an expeniture of \$3,891.32, showing a balance in the hands of the Treasurer of \$922.20. We desire to express our appreciation of the systematic manner in which the Treasurer had prepared his statement for our inspection, and the uniform courtesy with which he gave every information asked for by your auditors.

JAS. GOLDIE,
NICHOLAS AWREY. } Auditors.

SUPPLEMENTARY REPORT FROM SEPT. 1st TO DEC. 1st, 1889.

RECEIPTS.	\$	c.	EXPENDITURE.	\$	c.
September 1st, Balance on hand.....	922	20	Electrotyes.....	20	25
Members' fees, September, October and November	108	00	Advertising meetings.....	3	00
Advertisements, September, October and November	73	80	<i>The Canadian Horticulturist</i>	403	94
Back Nos. and bound volumes, September, October and November	6	79	Plant distribution	5	70
			Russian exchange.....	29	00
			Books and exchanges.....	5	00
			Commissions.....	12	50
			Audit.....	20	00
			Express and duty.....	6	77
			Postage and telegrams.....	9	28
			Printing and stationery.....	23	19
			Directors' expenses.....	10	30
			Salary secretary-treasurer, editor and clerk.....	225	00
			Stenographer	105	00
			Balance in hand,.....	231	86
				1,110	79

To the President and Directors of the Fruit Growers' Association:

We, the undersigned committee appointed to audit the receipts and disbursements of the Secretary-Treasurer from the first September to the 1st December, 1889, beg to present the following report:

We have examined the vouchers, compared them with the items of expenditure, and find them correct, showing receipts amounting to \$188.59, and an expenditure of \$878.93, showing a balance in the hands of the Treasurer on the 4th day of December, of \$231.86.

JAS. GOLDIE,
WM. SAUNDERS. } Auditors.

REPORT ON NEW FRUITS.

The secretary read a report of New Fruits which had been received by him during the past two seasons as follows:

I think it is very important that a careful record be kept by this association of all new fruits that are originated in Ontario, and so soon as any one is found to possess sufficient merit to deserve a place among our older varieties, that some steps be taken to encourage its propagation for the general good. I would be in favor of the appointment

of a fruit committee of three practical men, whose experience combined would cover the different varieties of fruits pretty fully, to whom your secretary could send samples of fruits in their season as they are sent into him, and who should report through him to this Association regarding the same.

During the last two seasons several new fruits have been sent into me, and in order to present some account of them to you I have prepared this paper.

APPLES.—*Reany's Seedling* is an apple that impressed me rather favorably. It was grown by Mr. S. Reany, a few miles from Port Elgin, who exhibited it at some of the local fairs, where it attracted the attention of Mr. J. H. Wismer, of Port Elgin, and he sent me a sample for my opinion. It is a fall apple of good quality for the table, and may be thus described:

Fruit above medium size, almost round. Skin smooth, slightly uneven. Color, rich golden yellow, sprinkled moderately with small grey and light dots. Stalk three-quarters of an inch long, inserted in a funnel-shaped, slightly russeted cavity. Basin abrupt, even. Calyx partially open. Flesh yellow, fine grained, juicy, with sprightly, vinous flavor. Core small. Quality very good to best.

Keane's Seedling is a beautiful dessert apple which was figured in the *Canadian Horticulturist*, Vol. xi, page 284. The original tree grows about four miles north of the town of Orillia, on the farm of Mr. James Keane, and is a chance seedling of about twenty years of age. Mr. T. Williams, of Orillia, who sent the samples to me, says it has borne every year for the last nine years most abundantly.

At first sight this apple has much the general appearance of Gravenstein, but is below average size, and struck me favorably as a commendable autumn dessert apple. It is below medium size, of even form, roundish oblate, with closed calyx in a corrugated basin. The skin is shaded, splashed and striped with bright crimson, which is deepest on the sunny side. The flesh is white, crisp, fine grained, juicy, and of a rich, aromatic flavor.

Morse's Seedling Harvest apple was sent me by Mr. S. P. Morse, of Milton, who says it ripens with the old Early Harvest, averages larger in size, and is perfectly free from leaf blight, or apple scab. The skin is very smooth, with obscure whitish dots; stem, short, stout, and set in an irregular cavity; calyx closed, set in a round regular basin; flesh, white, tender, juicy, sub-acid. It is an apple that seems to possess especial merit as an early cooking apple.

Two seedling apples were reported on by Mr. Wm. Saunders, in the *Canadian Horticulturist*, Vol. xi, page 13, and I append his description of them.

Robson's Seedling, grown by Mr. T. C. Robson, Minden, Ont.

Size above medium; form, oblate; color, greenish yellow, streaked and splashed with red; stem, slight and short, with a deep smooth cavity; calyx, open; basin, rather deep and slightly ribbed; flesh, yellowish white, fine-grained and moderately juicy, with a faint aroma and a mild pleasant flavor; core, rather large. A fair dessert apple and a good cooker. Its size and appearance would make it a desirable apple for the north. From its form, color and flavor it is probably a seedling of Duchess of Oldenburg. Season, October and November.

Robertson's Seedling, grown by Mr. F. M. Robertson, Minden, Ont.

Medium size, $2\frac{5}{8}$ inch by $2\frac{1}{2}$ inch; form, oblate conic; color, greenish yellow, more or less splashed and dotted with dull red; stalk, short and slight; cavity, rather shallow; calyx, small, closed and shallow, with the basin strongly ribbed; flesh, nearly white, firm, grained, juicy and crisp; sub-acid, not high-flavored, but a pleasant eating apple and a good cooker; core, medium size. It is the type of Duchess of Oldenburg, but smaller in size and later in season. Ripe in November.

PLUMS.—The *Owen Sound Beauty* was sent to me by Mr. R. Trotter, of Owen Sound, who says he believes it is a seedling which has been propagated by suckers in that neighborhood for the last twenty-five years. The tree, he says, is a rapid healthy grower, with thick broad leaves. If this plum is a good bearer it will be a most desirable one for the commercial orchard, both on account of its excellence as a dessert plum and its lateness of ripening.

The fruit may be described as large, nearly globular. Skin, brownish purple with a thick blue bloom on the sunny side, dotted with numerous fawn-colored specks. Suture distinct, dividing the plum into unequal parts. Flesh, orange, very juicy, rich and excellent; separates freely from the stone. Very good. September.

The same gentleman also sent me three fine plums on the 3rd of September last, and which for convenience I will refer to as Nos. 1, 2 and 3.

No. 1 has been grown about Owen Sound for many years from sprouts without name, and is supposed to be a seedling. It is a very fine dark colored plum, obovate, with a broad shallow suture half round; stalk curved, surrounded with a peculiar ring, very good in quality. It much resembles Bradshaw, from which it may be a seedling. Mr. Trotter proposes to call it "Lady Grey."

No. 2 is a seedling from Duane's Purple, a clingstone, with greenish flesh and rather poor quality, and under medium size. The tree is a good bearer and quite hardy.

No. 3 is a seedling from Smith's Orleans. It is a semi-cling of yellowish flesh and very good quality; in size, above medium; and the tree is a very healthy grower, said to be free from black-knot. The foliage is very dense, the leaves are thick, dark green and leathery. It is a most abundant bearer.

The *Early Green* was sent me by Mr. W. Holton, of Hamilton, and seemed to me to be a most valuable seedling. An outline sketch of this plum appeared in our journal, Vol. xi, page 265, which, however, shows it rather under size. It is a delicious plum of most excellent quality, of medium size, roundish in form, with a delicate skin marbled in two shades of green; the pit is small and free. The stem is delicate and about three-quarters of an inch long. The great point which makes it especially valuable is its time of ripening. The sample came to hand on the 3rd of August, and was then in prime eating condition.

PEACHES.—I have little to report to you under this head. Mr. A. M. Smith, of St. Catharines, sent me a seedling of his which on account of its time of ripening is worthy of notice. He calls it *Smith's Extra Late*. The sample came to hand on the first of October, and on measurement I found it to be about eight inches in circumference, a fine large yellow flesh and yellow-skinned peach of good quality, and a perfect free-stone.

Another seedling was sent me from Chatham by Mr. J. L. Scott, a magnificent peach, equaling, if not surpassing the Early Crawford in quality, and also resembling that popular variety in size and beauty of appearance. The skin is yellow with an exquisitely beautiful red cheek; flesh, yellow, rich, juicy and melting, and free from the stone; well worthy of propagation. Its season of ripening is about the middle of September.

SMALL FRUITS.—The *Pearl Gooseberry* is a seedling of Prof. Saunders, raised by crossing Downing with an English variety known as Ashton's Seedling. It has been now fairly well tested, and is worthy of especial notice because of (1) its good quality, (2) its size, (3) its great productiveness, and (4) its freedom from mildew. I saw a row of some fifty bushels at Port Dalhousie, on Mr. Smith's grounds there, and every one of them was a surprise on account of the number of berries to the inch of wood, and all of them much larger than the Downing.

Crosby's Seedling is a fine red gooseberry, samples of which were sent me in 1888 by Mr. A. Reeve, of Highland Creek. He says it was raised by M. L. Crosby of the township of Markham, about eight years ago. Fruit very large, roundish, slightly oval; skin, smooth, thin, very dark red, with veins of a lighter red, mostly dotted with small grey dots; stem stout, calyx prominent, quality excellent. The only question concerning this berry is whether its present freedom from mildew is constant or not. It has so much the appearance of the genuine English varieties, that one cannot help being a little fearful of this point.

The King Conn, or Autocrat, has been so well brought before you in other ways, that I do not think it necessary to speak of it here. Nor need I speak of the *Northern Light Grape* which is also well introduced to your notice in our Annual Reports.

I have now completed my list, and hope that out of it may come some fruits that will prove worthy of general cultivation. It is, I think, an important feature of our work to improve the varieties of fruits, both in the interest of the grower and of the consumer, and I do not think we should be hindered from giving our honest opinion of a new fruit, because it may help to make rich the originator or the introducer; nor should we hesitate to condemn a poor thing for any personal reasons of friendship to the introducer.

L. WOOLVERTON.

Prof. W.M. SAUNDERS (Ottawa).—I am glad the subject has been brought forward by the Secretary. Some of the new fruits that have been brought before us of late have great promise; but some of them may succeed in some parts and not in others. I think it is of very great importance to the fruit growers of our country to know just what is being done in this direction. I may add that I hope fruit growers will use the experimental farms in testing new fruits. I assure you that every precaution will be taken to keep the fruits from becoming public property.

THE PRESIDENT'S ADDRESS.

Once more we have met together to render an account of our stewardship for the year, and in council to call from our various experiences such information as combined wisdom concludes to be important, as well as for the advancement of horticulture and the general benefit of our country. Nay, if we possess the true spirit of our profession, our aim will be to reach out to humanity with a desire to do good to our fellow man by upholding whatever store of knowledge we may have been able to extract from Nature's great storehouse of horticultural treasures. We are inspired into effort when we observe the good results of the labors of those who have gone before us; but still the field of research grows wider. The deeper we dig into the horticultural mine the clearer we see our own imperfections, and yet how keenly interest grows in the glorious study. There was a time when organizations such as ours were looked upon by an ungenerous public as a species of ring, working only for individual benefit; but with the spreading of interests, the dissemination of our discussions, and the unwavering persistence, generosity and honesty in principle of our pioneers in horticulture, to-day we find an appreciative audience. Other organizations with similar interests are working in full sympathy with us. Hand in hand we travel with our elder sister agriculture, and so interesting are the consultations we have had together that individual interest gives place to a feeling of duty to our country and interest in a general welfare.

But it is not enough that the agriculturist and horticulturist should foster an interest in our studies—the field is much wider and must include all kinds and conditions of humanity. But how shall we reach the masses? We must look to the rising generation, and in order to reach them we press for a place in common schools, that practical as well as theoretical horticulture may form a branch in the training of children. Our claim, too, is not based alone upon the money value to be reaped in after years from a knowledge of and interest in this subject; we aim higher and crave a hearing from our educational promoters as well as the public. Upon the grounds of morality and social purity in their widest sense, we appeal to a Christian people that in the early training of children the kindling of an interest in nature's charm and treasures will lead the young mind to deeper investigation, and through this channel be led to a contemplation of our great Creator. In itself the study is elevating, refining and pure; we do not see the rough element of the human family taking to flowers; even in the lower walks of life we find those whose tastes are centered in the garden or forest flowers. Find such a man and we see an enchanted home, a kind and loving husband and father, and one whose sympathies are good and pure, whose children will live to bless him. It cannot be looked



Robert Burnet

upon, therefore, as unreasonable if we request a higher recognition at the hands of our Government in the best interest of our children, by insisting that the study of agriculture and horticulture be placed in the common school curriculum. By the present system our brightest boys are systematically educated away from interest in rural pursuits, so that now the chief industries of Canada lie languishing for the want of intelligent attention by an educated yeomanry, whereas professions of all kinds are crowded to excess. Everything is done to give prominence to the so-called "learned professions," which in itself is right enough; but why neglect entirely the foundation and backbone of all interests—the arts of agriculture and horticulture? Are they so degraded as to be beneath the ken of educated humanity? Surely it is a feeling long since dead that the tiller of the soil should be recognized as a sort of machine, a clodhopper, a necessary evil, one whose avocation should compel him to hold down the head and remain an outcast from cultivated society. The true aim of education is to fit the pupil for some sphere of usefulness. A grave responsibility rests upon our legislators for so long neglecting, from an educational point of view, this, the greatest economic science in our country, and until this study is placed, as it should be, prominently in our common school system, justice cannot be complete.

The season of 1889 will long be remembered by fruit growers. The unusual and widespread frosts of May, while vine, plant, bush and tree were in bloom, did its work of destruction so thoroughly that in most sections nothing was left to mature into fruit. In some favored sections the blossom was either not far enough advanced to kill, or the fruit formed and so beyond injury from such a degree of frost. Generally speaking the raspberry crop was fairly abundant, but other small fruits were in most sections less than half a crop. The grape escaped better along the Niagara peninsula, especially that portion between the lake and mountain range, and in the water fronts of Essex, than in any other section. Pears and plums yielded enough to satisfy home demand generally in the western part of the province; but the apple crop was confined chiefly to the counties of Kent, Essex, Elgin and Lambton. The loss of the apple crop to this province is a large one, but still we find some grains of comfort that we hope may encourage growers to persevere and put forth greater efforts in the future. While we feel the financial loss here, the consumers in foreign markets feel more keenly than we can the loss of this luxury which they have learned to appreciate more and more every year. Prices have advanced materially, and we observe that this season there is a much greater difference on British markets between prices of Canadian apples and the apples of other countries; that difference being in favor of ours. What fruit has been shipped is better culled and packed than in past years, and as a result our reputation for a genuine article is better. Then, again, there is a change working throughout British markets in favor of the best flavored fruit rather than highly-colored specimens. The Rhode Island Greening that a few years ago had to be sold at a loss, generally on account of color, is now coming into favor. It realises about the same price as the Baldwin this year, with a tendency, I believe, to take its proper place in public esteem several points ahead of the Baldwin; intrinsic worth is sure to come to the front. Is it not reasonable to expect that the codlin moth has been materially diminished by the absence of the apple crop, and that next year we may hope for much less damage by that orchard pest? This must not deter growers, however, from using means to eradicate the pest entirely. Orchards have had in most instances a much needed rest, and if we can arouse growers *now* to give proper attention to their orchards in the way of cultivation, manuring, trimming and keeping clean, it is reasonable to look forward to a new era in fruit culture. We have an opportunity now, bought dearly it is true, but if we take advantage of it the results will be most encouraging I am sure. To produce clean, large, high-flavored fruit, we must see to it that the soil is kept in good heart, that those substances required to produce such a crop are returned regularly and systematically to the soil. If this is attended to we will succeed; if not, failure stares us in the face.

The carrying companies are still to blame for much of the loss on fruits shipped. We can still charge them with rough handling, lack of proper accommodation, and often much delay in transit. The shipments of last spring bear abundant evidence of this. By

way of a practical illustration I will give one out of many instances coming directly under my own notice. A shipper at London, Ontario, sold two hundred barrels of choice apples to a firm in Covent Garden, London, England. This cargo I carefully inspected both before and after the fruit was packed, and I can testify to the fact that the fruit was choice in sample and varieties, and in splendid condition for shipping. Every possible precaution was taken, and the most positive instructions given to the Grand Trunk railway agent at London, Ontario, as to handling, accommodation and despatch, with a request also that these instructions should be sent forward to the agents of the ship. Mark the result: The goods were nearly a month on the way. I quote the report of the Covent Garden firm, Messrs. Pankhurst & Co.:

"When our man arrived at the ship a barge was alongside taking off the steaming dung quite a yard and a-half high on the deck, and immediately over the apples. Of course he knew what to expect, and sure enough when the apples came from below they were half full of juice. It astonishes us that the shipping company, in their own interest, are not more particular, as these were too full of water to go into the dock shed, but stood on the quay literally swimming in their own juice. We enclose a copy of claim we sent in to the company; also their reply." The claim referred to is made up thus:—

	£ s. p,
Cost of apples	80 0 0
Freight on them	36 15 0
Dock dues	2 6 8
Making a total of	<hr/> £119 1 8
The sales were	
110 barrels, sold at 1/0	5 10 0
30 " 2/6	3 15 0
10 " 3/0	1 10 0
10 " 3/3	1 12 6
40 " waste ...	... ... ..
Total sales	<hr/> £12 7 6
Leaving as loss the balance	<hr/> £106 14 2

To this claim the Allan Brothers & Co. replied that they could not see why the ships should be held responsible, and could only attribute the loss to *natural decay*! It certainly was most natural that the fruit should decay under such circumstances. The Grand Trunk also denied all liability for negligence. Results similar to this are, I regret to know, but too common, especially where fruit goes forward on London boats from Montreal and New York.

I am glad to be able to report quite a different state of matters, so far as I have personal experience and have heard the same from others regarding shipments by the Beaver line of steamers. In three ships of this line special apartments, supplied with atmospheric blast, are used for fruit, and I understand they will not carry fruit at all excepting what they can thus accommodate. As a result I have not been able to trace any complaints against this line for bad handling or damaged fruit. On the contrary, all reports I have received have been most complimentary, and my own experience fully corroborates these reports. If other companies do not give equally good accommodation, shippers must, in their own interests, seek the channel where they are protected from loss. There is no reason why the other lines should not supply special cold chambers for fruits; indeed there is no encouragement to widen the orchard area unless such accommodation is supplied liberally. I am sure horticulturists throughout the Dominion will be pleased to know that a convention of horticulturists, experts from every province, has been called to meet in Ottawa in February, for the purpose of discussing the present situation, and advising possible means for a more perfect development of our interests. The Dominion Government has acted generously in appropriating a sum of money towards the expenses of this gathering, and a full programme of the subjects for discussion is being prepared under the direction of the Minister of Agriculture. I trust a large delegation from this province will be present.

It has been my privilege lately to examine a newly-patented fruit package known as the "Kerr Ventilated Barrel," specimens of which I have requested the owners to have at our meeting. From a careful examination of this package I feel satisfied i

possesses several points of superiority over the ordinary barrel for the shipping of apples. The inventor has evidently followed the generally expressed desire for ventilation, and in this particular has succeeded beyond dispute. Time was when, although it was considered necessary to have perfect ventilation in the apartment where fruit was stored, either at home or in transit to market, it was looked upon as necessary to have the barrels containing such fruit as close as possible. It appears reasonable that if ventilation is valuable in the storing department, it must be equally valuable in the packages themselves, and experience has borne this out as a fact, providing the fruit is in proper condition for shipping at all. It is quite unnatural to confine the fruit from a circulation of pure air, and it cannot but be injurious to the fruit when air is confined in the barrel with it until it becomes foul. It is well-known that if we store fruit in an ice-house or pit it will keep well for a time, but so soon as it is exposed to the air decay sets rapidly in, whereas if such fruit had been stored in a more natural atmosphere it would keep longer and retain flavor more perfectly. With the Kerr barrel a packer cannot hide poor fruit so easily in the middle of the package as the sample can be seen from top to bottom through the openings between staves. It is also said to be lighter than the ordinary apple barrel which might make a slight saving in freight. From the method of construction it can be made any size to suit trade, and the cost will vary according to size. Being made entirely by machinery, I presume it can be placed on the market for something less than the ordinary barrel. The staves can be cut of such thickness as may be necessary to give sufficient strength to avoid material damage by pressure when piled in tiers in a vessel hold. It also seems to me that the damage caused ordinarily by the shunting of cars and running vessel shoots may be largely overcome with this barrel, as there is more "give" to it than in the ordinary barrel when striking upon the top or bottom edges. I believe a cargo of apples packed in these barrels, shipped in cars and vessel apartments well ventilated, should arrive in Britain in a perfect condition, and certainly the British broker could not truthfully return an account of sales classifying any as *wet*. A purchaser could see the sample fairly well without opening, and would naturally feel greater confidence in purchasing such fruits on sight. As this barrel can be made as easily with or without bilge, I feel anxious to have it tested in all forms, for after all there is nothing so convincing as actual test.

Members of this association will remember seeing some months ago the prospectus of the "Empire Produce Co." enclosed in the *Horticulturist*. The object of this company is to act as brokers and commission agents for the growers of fruit and general farm and dairy products, disposing of the same to the legitimate cash buyers who sell direct to consumers both in the markets of Canada and Britain.

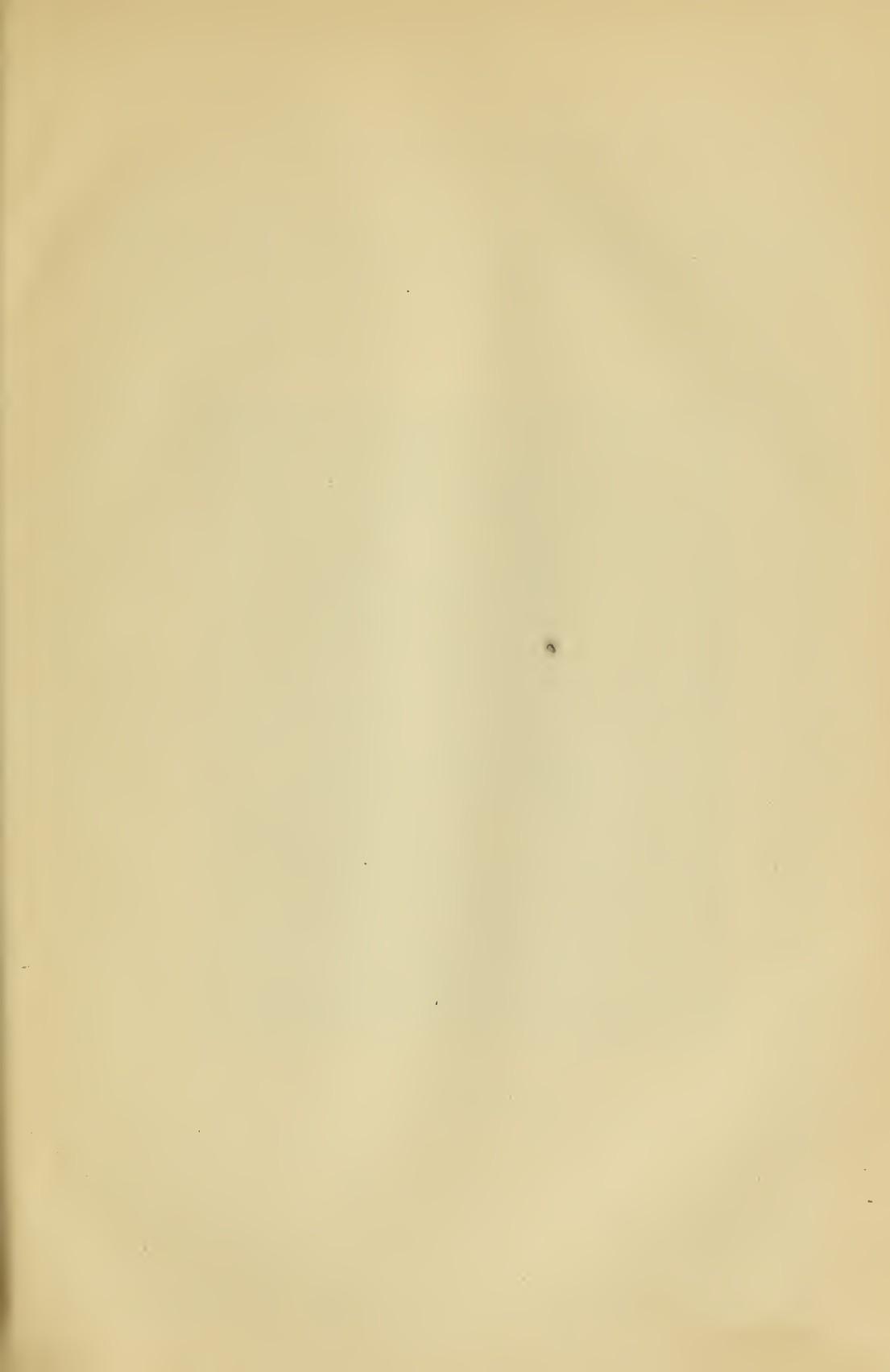
I think we are all agreed that it is unsatisfactory to consign goods to commission men who are also retail dealers or speculators. Self interests under such circumstances must clash with that of the client. We often hear complaints of bad returns, and insinuations that particular consignments of fruit must have been turned into the commission men's own stock instead of being sold in fair and open competition. Working under such a charter as this company has, no such doubts can exist. The company cannot buy a cent's worth on its own account. Its books will be audited and always open to prove the *bona fides* of returns. The precise mode of selling has not yet been decided upon, and I am authorized to ask for advice from this Association on this point, as well as other points that may occur to growers and shippers touching our interests. There is one important reform that this company will endeavor to bring about in time for next season's business, namely, the earlier daily arrival of fruit for sale in local city markets. It appears that the trade, particularly in Toronto, is greatly inconvenienced by uncertain and late arrival. The co-operation of both growers and dealers is invited to secure suitable railway and steamboat accommodation, so that goods may reach their destination at an early hour in the day. I desire members of this Association, as well as others interested, to speak out now plainly, and by advice to assist in placing this most important branch of trade upon a better footing than it has heretofore been. Personally, I have taken a deep interest in this scheme, believing that it is in the interest of producers, and that therefore it will prove to be a strong factor in advancing our industry by the obtain-

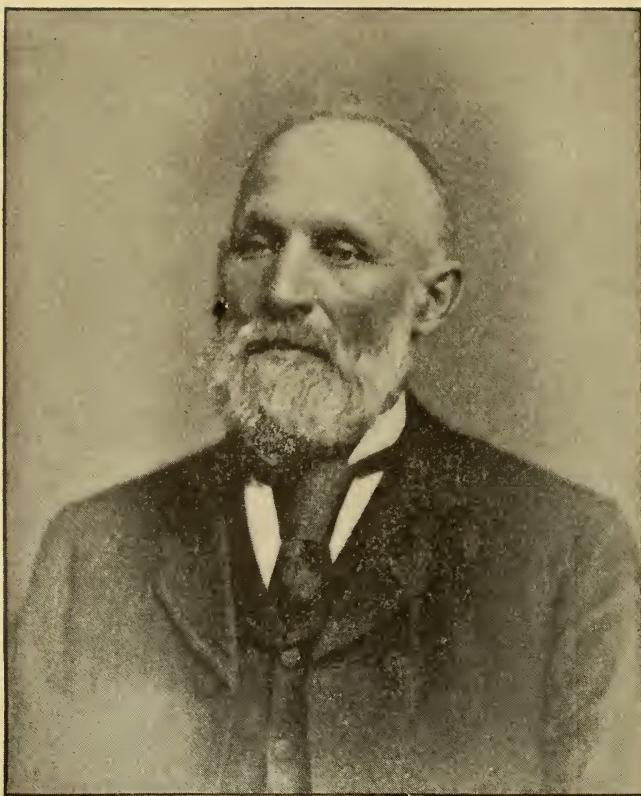
ing of prices in accordance with the brands, by assisting to regulate as well as to create brands, and by inspiring more confidence in the growers and shippers here, as well as the dealers and consumers in foreign markets. There is abundant room for such a company to work, also in opening out new markets and introducing into foreign markets fruits that at present are grown only for local markets.

Our Provincial Government has materially strengthened our hands by opening a place for our experts at farmer's institutes, where we are able to reach a class who otherwise paid little if any attention to fruits. If we can succeed in convincing fruit growers, large and small, that it is as necessary to produce the finest samples in order to make money as it is to breed the best animals, or clean thoroughly so as to bring to market the best sample of grain to command the highest prices, then we will have accomplished a great end. Probably few, if any, will deny this, but it seems difficult to get producers schooled up to that point where they will act in everything up to the "golden rule" in its strictest sense. It is an easy matter for a man dishonestly inclined to practice a fraud upon his customer by placing poor fruit in the bottom or middle of the package. It also often seems to be a difficult thing for a man who may have a deservedly good name for honesty in general business matters, to attempt to pack apples for fear the finest samples should rise to the top and inferior fruit settle into the heart of the package. But notwithstanding, every drawback advancement is the order of the day in horticultural circles.

Since our last annual meeting death has removed from our ranks one who often addressed us from the President's chair ; one whose devotion to practical horticulture was remarkable, and whose enthusiasm was inspiring, in language forcible, pure and practical, stern in good principle and Christain worth, and in example becoming his high calling. We mourn our loss in the death of the Rev. Robert Burnet.

ALEX. McD. ALLAN.





P. C. DEMPSEY,
President 1880-1882.

THE WINTER MEETING.

The Winter Meeting of the Ontario Fruit Growers' Association was held in the Court House, Hamilton, on Wednesday and Thursday, the 20th and 21st of February, 1889. The President, Mr. A. McD. Allan, called the meeting to order about ten o'clock a.m.

RUSSIAN FRUIT TREES, WHAT OF THEM?

The following paper was contributed to the Winter Meeting, at Hamilton, by Mr. D. W. Beadle, of St. Catharines :

Some few years ago the Fruit Growers' Association of Ontario became convinced that if our brethren of the "cold north" were ever to enjoy the pleasure of raising their own fruit, they must be supplied with trees much more hardy than those that formed the orchards of Southern Ontario. These had been planted by many who were anxious to have in their more northern homes the fruits that we here enjoy, but their labor ended only in disappointment. Our fruit trees were found to be unable to endure the severe cold of that climate. At the same time our brothers in Quebec, and our cousins in the north-western United States had become convinced of the same truth. The Government of the United States had undertaken to meet this need of their north-western states by importing scions from northern Russia, and this naturally turned attention to that country as a probable source from whence to obtain a race of fruit-bearing trees sufficiently hardy to flourish in our cold north-land. Mr. Chas. Gibb, an enthusiastic cultivator of fruits, residing at Abbotsford, Quebec, learning that Professor J. L. Budd, of the Agricultural College of the state of Iowa, intended visiting northern Russia for the purpose of ascertaining whether the fruit trees of that country were likely to supply the want of American north-land settlers, arranged with the professor to accompany him in his Russian tour. After his return, Mr. Gibb very generously communicated to the officers of this Association the information he had acquired during his visit to Russia; and they, being convinced that many of the Russian fruits would thrive in our cold sections, at once set about importing from north-eastern Russia those varieties which Messrs. Gibb and Budd had found yielding abundant fruit in a climate that, in both its summer heat and winter's cold, closely resembled that of our more northern latitudes.

From the importations made by our Association and those made by Professor Budd, and likewise the importation made by the United States Government, trees have been propagated and disseminated, and the inquiry now is, what is the result?

Are the Russian fruit trees proving to be what was expected? Do they endure the climate of the cold north-land of America, and do they bear fruit of such quality as to make them desirable?

Unfortunately the planting and care of these trees in Canada has not been conducted in such a manner nor for such a length of time as to enable me to point to results in our own northern regions. It becomes necessary, therefore, to draw upon the experiments that have been conducted at the stations of northern Iowa, and gather what information can be gleaned from planters in the Province of Quebec, and in northern Vermont just on the border of our sister Province.

First, then, let us look at the apples. The limits of such a paper will not admit of an exhaustive examination of the varieties that have been imported, and are being tried in various sections, even if I were competent for the task. I shall only venture to name a few, and chiefly those that give evidence of being worthy of attention from Canadian planters.

The Duchess of Oldenburg is already well and favorably known. The bare mention of this favorite autumn apple is sufficient.

The Yellow Transparent has also won for itself golden opinions. Mr. Simon Roy, of Berlin, writes to me that he wishes he had planted a dozen trees of it instead of two. Mr. Chas. Gibb speaking of it at a late meeting of the Montreal Horticultural Society, says that he expects it will be largely planted in the Province of Quebec because of the hardiness of the tree, its early and abundant bearing, the even size of the fruit, its fair quality and extreme earliness. At the same meeting Mr. John Craig said it needs no commendation, it is a favorite wherever tried. Dr. Hoskins residing in Northern Vermont near latitude 45, says the tree is productive, the fruit full medium in size, when dead ripe hardly inferior to Early Harvest, and always as smooth and fair as turned ivory.

The tree of the Hibernal variety is more hardy than the well-known Duchess of Oldenburg. The fruit is large, handsomely colored, ripening late in the autumn, and when grown far enough to the northward will keep until midwinter. In speaking of this apple together with Antonovka, Titovka and other Russian varieties, Mr. A. W. Sias, of Rochester, Minnesota, about latitude 45, says: "We are getting more large and fine fruit at the present time in Minnesota from trees of Russian origin than from all others."

Antonovka is perfectly hardy, has fruited in Northern Wisconsin and is described as resembling a very large Grimes Golden, only more oblong; and when ripe of a light golden color; ripens there in February and March.

Switzer is more hardy than the Fameuse or Snow apple; the fruit resembles the Snow apple in form and color, is juicy, tender in flesh, sub-acid, an excellent dessert apple. The late Chas. Downing said that it was a valuable fruit both for home use and for market.

Longfield has been fruited by Mr. Tuttle, of Northern Wisconsin, who says that the finding of this one variety is worth to him all the labor and expense he has had in testing Russian apples. Dr. Hoskins, of Vermont, mentions it among the fine dessert apples. It has fruited in my own grounds, for the tree bears young and abundantly. The apples were of good size, prettily colored and of good quality, ripening here in autumn.

Borovinka resembles the Duchess of Oldenburg in size, form and coloring, but is finer in flesh, less acid and better as an eating apple. Professor Budd says that the tree is a true Ironclad, and an early and abundant bearer. It ripens about a month later than the Oldenburg.

Saccharine has fruited in Iowa, and proved to be a very richly colored apple of medium size, exceedingly sweet and ripening in the latter part of September.

Enormous is very large in size, somewhat like the Alexander in form, and covered with red stripes. The tree is very hardy, and Professor Budd says the apple is surprisingly good for so large a fruit.

I will not weary you with a further description. These will suffice to show you that there is great variety among the Russian apples that have been imported and fruited in America, and that there is among them apples of excellent dessert quality, handsome in appearance, of large size, and extending over a long period in their time of ripening. The Hon. R. P. Speer, Director of the Iowa Experiment Station, had a bearing orchard of 1,500 trees, consisting mainly of Walbridge, Fameuse, Talman Sweet, St. Lawrence and Pewaukee. The winter of 1884-5 ruined it, so that there were no sound trees in it save the Whitney Crab, the Wealthy and the Russian trees. Such is his testimony to hardiness of these trees in an extremely cold and trying climate. Dr. Hoskins of Northern Vermont says that he has over a hundred varieties of Russian apples growing, many of them sixteen years planted, and that one thing has been demonstrated to his satisfaction, and that is that as a class these Russian apple trees are very much more hardy as against the winter's cold than those previously grown on this continent. Besides this he claims that in productiveness, size, and beauty they are more than a match for those varieties which we have received from Western Europe and those of our seedlings derived from them and quite as large a proportion of them that will rank as of dessert quality. Such is the testimony which we have with regard to the Russian apples, testimony from gentlemen whose statements and opinions command respect; and therefore it

seems to me that we are encouraged thereby to extend our planting of these Russian apple trees, in the firm persuasion that out of them we will eventually obtain varieties that will gladden the hearts and homes of the dwellers in our most extreme North-land.

Further, it is my conviction that we are also to obtain from this source no mean collection of pears that will thrive at least as far north as latitude 44. Professor Budd states that he found pear trees in Russia growing as street trees where the winters are so severe that the Duchess of Oldenburg will not endure the winter, and where the thermometer goes down, down to fifty below zero, and that with but scanty snowfall. Since his return he has imported scions of some of these, and having propagated and disseminated them, now gives us the results of his experiments. He says that Bessemianka, planted on dry soils and sufficiently deep to protect the tender seedling roots on which we are obliged to graft, is doing well so far north as the 44th parallel; that the fruit is of medium size, nearly seedless, tender in flesh, juicy, mildly sub-acid, almost buttery, and very satisfactory for dessert use. Ripe in September.

Gakovska, he thinks, will be hardy enough to plant as a street tree in North Iowa, having never heard of any injury to the trees by winter's cold or summer's heat. The fruit is large and handsome, valuable mainly for cooking, for which use he says it is not excelled.

Autumn Bergamont he ranks in hardiness with Bessemianka, says the fruit is small to medium, nearly sweet, very juicy, and good for dessert use.

In addition to these the Professor mentions Kriskaya Victorina, and Medviedevka as fine hardy trees that have not yet borne fruit in this country, but which are highly commended by Russian pomologists. The Early Bergamont, Flat Bergamont and Saccharine he says are fully as hardy as the Wealthy apple.

I cannot close without saying a few words about the Russian cherries. For our knowledge of these we are greatly indebted to Professor Budd. Although some of them have fruited with me, yet that fact is no evidence of their being sufficiently hardy either in tree or fruit-bud to be of value in those parts of the country where the Early Richmond and English Morello fail. From Professor Budd I learn that young cherry trees which he imported in the spring of 1883 have had very hard usage, having been fully exposed to the recent test summers and winters which literally killed out the trees, young and old, of the grade of hardiness of Early Richmond and English Morello, and have in addition been most unmercifully cut for scions in autumn and for buds in summer. Yet, notwithstanding this, many of them have proven to be as hardy in tree and fruit bud as the native wild plums, and although during the season of blooming in the spring of 1888, they were visited with severe frosts, yet twenty or more sorts fruited, some of them very heavily. I will name some of the varieties that he mentions, those that seem to me most worthy of our attention.

Professor Budd says that Late Amarelle trees from five to six feet in height were, this past season, bending with weight of the fruit; and that, notwithstanding the severe spring frost when in blossom. The fruit is medium to large in size, dark purple when ripe, which was about the 20th July.

Shadow Amarelle, so called from the mirror-like reflection from the shining skin, resembles the Late Amarelle in size, quality and season of fruit. The trees were also laden with cherries the past season.

King's Amarelle ripens with Early Richmond, has white flesh, juice slightly red when fully ripe, pit very small.

Orel is of the Vladimir family, of dwarf habit, coming into bearing when the trees are only from three to four feet high. Fruit larger than Montmorency, nearly black when ripe and very mild sub-acid flavor. I have no doubt but that this will be a valuable sort in our very cold north-land.

Bessarabian, fruit large, dark red, firm flesh, very mildly sub-acid when ripe. Tree exceedingly hardy.

Professor Budd says the Sklanka tree is as hardy as the Manitoba maple. Fruit large, flesh yellow, firm, very mildly and refreshingly sub-acid, pit very small, season of the Montmorency.

These are a few of the varieties which Professor Budd has found to be hardy, productive, and valuable. He advises that the cherry trees also be planted from four to

six inches deeper than they stood in the nursery, because of the tenderness of the mazzard or mahaleb stocks upon which we are as yet compelled to work them. When thus planted roots will be thrown out above the bud in two or three years, so that if the stock upon which it is worked should perish after that, its loss would not be material. He also advises heading the trees low, experience having been shown that sometimes the trunk will be seriously injured when exposed while the twigs show no discoloration whatever. In the Volga region the cherry is grown altogether in bush form, with several stems, like the currant or gooseberry. For nursery propagation the Professor advises most strongly root grafting the cherry, setting the grafts down to the top bud of the scion so as to favor the early emission of roots from the scion.

APPLE GROWING IN ONTARIO.

Mr. BEALL, of Lindsay, read the following paper: During the past ten years I have frequently endeavored to induce this Association to prepare a list of apple trees suitable for cultivation throughout the central and northern portions of this province. Such a list of varieties, if published in the annual report and corrected from year to year, or from time to time as might be required, thereby carrying with it the sanction and approval of the Fruit Grower's Association of Ontario, would be regarded by the public generally as a reliable list; something that could be depended on; and would do much towards giving intending purchasers of apple trees that information which is in greater requisition than any other, and hundreds of thousands of dollars might thereby annually be saved which is now paid for unsuitable stock forced on them by the peddlers; a class of gentry much more remarkable for the amount of "cheek" they possess, than for their knowledge of pomology—persons who profess to have all knowledge of the subject, but who generally know less what varieties would be suitable to the condition of the soil, climate and situation of any given locality than the intending purchaser.

My efforts in this direction were always met by the objection that the labor and expense of preparing such a list was too great for our Association to undertake at present. The necessity and desirability of the work proposed was generally admitted. I was therefore surprised to see in the *Canadian Horticulturalist* of October last, page 220, that the work which had been for so many years regarded as being too laborious and too expensive to be undertaken by the directorate had at last been completed and published. Now, although it was gratifying to find that the work I had so long advocated had been accomplished at last, I must say that the work as executed did not meet with my approbation, and I venture to assert, sir, that it does not meet your approbation or the approval of any other person in this hall. But, I may be mistaken. I will therefore read the list so that all may judge of its suitability to that portion of Ontario north of Southern Ontario.*

"A List of Hardy Apples for the Cold North—For summer: Yellow Transparent, Tetofsky. For autumn: Duchess of Oldenburgh, Alexander, McMahon's White, St. Lawrence, Switzer. For winter: Wealthy, Scott's Winter, McIntosh Red, Fameuse, Bethel of Vermont."

Let us look for a moment at these varieties separately. For summer: 1st. "Yellow Transparent." A new apple, but little known. Spoken favorably of by many; I hope its present reputation may be established after a lengthened trial. 2nd. "Tetofsky." The most worthless apple ever introduced for cultivation in this province.

For autumn—1st. "Duchess of Oldenburgh." This is one of the best and most profitable of our early apples. But, is it an autumn variety? I prefer calling it a summer apple. 2nd. "Alexander." Very good. 3rd. "McMahon's White." A new variety owned by Mr. A. L. Hatch, a nurseryman of Ithaca, Wisconsin. This apple

*By consulting the article referred to, it will be seen that the list was not intended for Central Ontario, but only for "The Cold North," by which we understand such parts as are subject to a temperature of 40° below zero. The list was prepared by a gentleman of ripe experiences in hardy fruits, Dr. Hoskins of Newport, Vt., and for the section of country for which it is intended we doubt if the list could be improved upon.—Secretary.

was admitted to the *trial* or second class list of the Wisconsin State Horticultural Society in 1885. It might be interesting to learn what means Dr. Hoskins of Vermont—the gentleman to whom we are indebted for the preparation of this list—took to ascertain the suitability of this variety to Central and Northern Ontario where the soil and the climate are so totally unlike that of Wisconsin.* 4th. "St. Lawrence." A first class apple, and, one worthy of more extensive cultivation. 5th. "Switzer." A variety but little known.

For winter—1st. "Wealthy." An apple that is, and probably will be, extensively cultivated for some time to come in this province, yet I think it ought not to be classed as a winter variety. It may be kept a little longer than the *Fameuse* but it loses its flavor earlier. 2nd. "Scott's Winter." A variety but little known in this country. 3rd. "McIntosh Red." A good apple where it can be grown, but one that has so many poor qualities when removed from where it originated that it is not likely to be used extensively. 4th. "Fameuse." A favorite everywhere, but should be classed as Downing classes it; an autumn apple. 5th. "Bethel of Vermont." An unknown variety here.

Of the twelve varieties named five or perhaps six are of first-class quality and can be as generally grown in *Southern* as in Central or Northern Ontario. The reasons why other varieties, of equal or greater excellence, such as the "The Baldwin, Greening and Northern Spy" should have been excluded from the list, and claimed as being suitable *only* for Southern Ontario cannot here be given.

That the apple growers of Southern Ontario have not a monopoly of the more excellent winter varieties, and that such varieties are not, as stated "wholly unfitted" to more northern localities is fully proven by the samples now on the tables, one of which, Northern Spy No. 2, was grown by James Endicott ten miles north of Lindsay, a district not noted for greater excellence of its fruit products than many other places much further north. The other Northern Spy, The *Bellefleur*; the large red apple, name unknown, was grown in my own orchard. The R. I. Greening by Jas. Emerson, South Mariposa, and the Russet by Mr. Taylor of the same place.

Mr. Croil reports many good varieties of apples grown in the Eastern Townships of Ontario. Mr. Wright of Renfrew reports good varieties in his district. Professor Saunders when visiting the Agricultural Show at Pembroke last autumn, noted many, "ten or twelve" excellent varieties of apples on the tables on that occasion, and saw abundant evidence to show that, with a little more knowledge and experience, many of the finer varieties may be successfully grown in that locality. In the neighborhood of Orillia and Barrie, and also of Collingwood and Owen Sound and other points along the shores of the Georgian Bay and Lake Huron, many of the finest fruits in the province are produced.

That apple growing is successful at these so called extreme northern portions of the province is only what should be reasonably expected when the soil and situation is considered, and especially so when the summer climate is compared with that of certain well known localities in Europe, where apple culture is successful.

The mean temperature of Berlin, about 600 miles further north than Toronto, for the three summer months is 64.5° Fah. Munich, about 300 miles further north than Toronto 63.6°. Paris, about 350 miles further north than Toronto 64.5°. Each place, it will be observed, has an average of mean summer temperature under 65°.

Now, if we trace the summer isotherm of 65° of mean temperature from Nova Scotia westward, we shall have a better idea of how far to the north apples may be successfully cultivated.

Starting from Halifax north lat. 44.40° it takes a course a little north of west across the Bay of Fundy and State of Maine to the north-east corner of Vermont, where it crosses the 45th parallel of north lat. and enters the Province of Quebec; then passing still more to the north crosses the St. Lawrence river at Montreal, and passes near, but a little south of the city of Ottawa, and soon after again touches the 45th parallel and continuing on that line through the English Land Company's settlement in the County of Haliburton, thence a little more northerly crossing the Georgian Bay and running length-

*Dr. Hoskins' experiments have been made in Northern Vermont.—Secretary.

wise of the Great Manitoulin Island, passing just south of the Sault Ste. Marie and along near the southern shore of Lake Superior, and from thence on through the state of Wisconsin, on its western course. The portion of Ontario south of this line contains a greater area suitable for fruit growing—apples, pears, plums and grapes—than can be found in the whole of Europe. Climate, however, depends as much on altitude as on latitude, and here again but little difference exists between the altitude of Europe and Ontario.

But the isothermal line of 65° of mean summer temperature does not mark the northern limit of apple culture. There is good reason to believe that apples may be grown where the sugar maple thrives, and certainly as far north as the northern limit of basswood growth; an acquaintance of mine has a good bearing orchard several miles north of Sault Ste. Marie. The isotherm of 65° before referred to, passes through the Township of Minden, about 120 miles further north than Toronto, where the apples were grown which were referred to on page 13 of the *Canadian Horticulturist* for January last. Two years ago I exhibited seedling apples at our autumn meeting which had been grown *north* of Minden, which were as large and as well colored as the "Alexander." The town of Pembroke visited by Professor Saunders last autumn, where he found such excellent apples, is about 170 miles further north than the city of Toronto.

If a few varieties of apple trees can thus be grown so far north under the present system of obtaining supplies, when all scientific or expert knowledge is ignored, and when thoughtlessness and personal greed seems to be the guiding motives, what may be expected when more thoughtful, but simple and more common sense plans shall prevail? I believe the time is not far distant when most of our best varieties may be grown wherever basswood flourishes, which is about 100 miles north of the isothermal line mentioned, provided seedling trees be grown from seeds procured from apples from the nearest point where healthy trees exist; varieties need not be considered, healthiness of the tree from which the seeds are obtained must be the only standard. Seedling trees thus produced should be planted out in the ordinary orchard where they are to remain, when two years old, in thoroughly prepared soil, and top-grafted with the varieties required as soon as a good root growth is obtained. By such a plan no tree need be out of the ground for an hour. An orchard will be secured in this manner for less than one-tenth the cost incurred by the present absurd system of procuring budded or grafted trees six or eight feet high from nurseries situated from 100 to 200 miles south, and where the soil and climate are altogether different; and especially when the trees have been out of the ground for six or seven months as is usually the case.

I venture once more to press upon this Association the necessity of preparing and publishing a list of apple trees suitable to the requirements of the principle apple-producing sections in Central and Northern Ontario. I do this because—as far as my experience goes—this information is required above every other thing in relation to this subject by the whole farming community. Publishing a list of varieties prepared by a gentleman of Vermont, who can have had but little practical knowledge of the requirements of this, the greater portion of Ontario, even when assisted by Wisconsin nurseryman, and especially when it contains so many absurdities, will not satisfy the farmers of Ontario who are taxed for the support of this Association and have a right to expect, and do claim the publication of such lists as are referred to, and also that they be prepared by the best practical talent at the command of this Association.

The following list of apples as suitable for growing in Central and Northern portions of cultivated Ontario, is submitted for the consideration of any person or committee which may be appointed by this Association to prepare such a list:

For summer: Red Astrachan, Yellow Transparent. For autumn: Duchess of Oldenburgh, St. Lawrence, Alexander, Fameuse, Haas, Colvert. For winter: Yellow Bellefleur, Ontario, Wealthy, Northern Spy, Golden Russet, Ben Davis, Canada Red, R. I. Greening. And the following I would recommend to farmers and others who wish to grow apples for their own family use only, viz.: Red Astrachan, Duchess of Oldenburgh, St. Lawrence, Colvert, Fameuse, Yellow Bellefleur, Ontario, Golden Russet. This list will furnish a continuous supply of apples from the middle of August to the middle of the following April.

The SECRETARY—I would take exception to the yellow Bellflower, both for market and home use. I have had most unsatisfactory experience for many years. It is a most unreliable bearer and you cannot depend on its form or size. It should not be commended, unless it grows better in northern Ontario than in southern Ontario.

Mr. A. MORRIS (Fonthill)—What the secretary says is true of the Niagara district ; but north of lake Ontario it is one of the best apples that grows. Mr. Beall's list does not give enough winter varieties for the northern section. I would add Seek-no-further, Tolman Sweets, St. Lawrence, and I think the Mann would stand the climate as far as Lindsay ; and for the extreme north the new rough apple called Anis, which grows in Russia six hundred miles further north than Quebec. It has fruited with us on small trees, and the quality and size resemble Rhode Island Greening. In regard to seedlings, the bulk of them that are grown from seed will be tender. There are only a few that are any hardier than the ordinary run of apples, so there is nothing to gain in growing them as hardy stock to top-graft. Another objection to them is that some are slow-growing, and if you graft a fast-growing top on that it never makes as good a fruit as a top-grafted or budded tree.

Mr. BEALL—A friend of mine had a yellow Bellflower in his orchard, and liked it very much. He top-grafted three other trees. Two of these trees—quite young—bore smaller apples ; the third bore, and continues to bear apples more than double the size of the original or either of the other two. My opinion is that there was some influence from the stock. They have been ruled out at fairs as not being the same apple, although the scions came from the same tree.

Mr. P. C. DEMPSEY (Trenton)—The Cellini is a very superior, very productive, beautiful apple, and with me it is quite as hardy as the Duchess of Oldenburg. They mature in October, usually. I took a yellow Bellflower tree, sawed the top off, and put Ben Davis on, but the Davis was perfectly worthless, and I concluded that the Bellflower was no good to graft other varieties on ; but the Bellflowers produced on the tree when the Ben Davis was growing on it were very superior and attained enormous size ; so we sawed off the Ben Davis, and finally sawed down the tree. (Laughter.) Can anyone explain why this was the case ? The Bellflower, in all places I have seen it growing, to all appearance will produce superior fruit one year, then for three or four years perfectly discouraging, then again give a nice crop. It is a poor apple—not a nice color, and does not open up in good shape. We want a red apple. The La Rue is found in the eastern portion of our Province. Many of them get as large as a large King, and very pretty indeed. I have never seen them growing, but you will find them in all the eastern exhibitions. I believe the best apple seedling cultivated to-day is the Trenton. (Hear, hear.) I have fruited it for six years, and have not seen one killed during the whole time. It is not a winter apple ; it comes just a little ahead of the Snow. It is a seedling of the Golden Russet. It is prettier than the Snow. It is a delicious melting, crispy apple. It is destined to take a high place if it succeeds in other sections as well as in ours. There is only one nursery firm has it—the Beadle firm.

Mr. JOHN WATSON (Dixie)—I have been an apple raiser and buyer for twenty years, and can endorse all the secretary said about the Bellflower. You can't grow it on clay land. Wherever you get a good Bellflower it is on a warm sandy loam.

The SECRETARY—I have a sandy loam, and it does not succeed there.

Mr. CASTON (Craighurst)—In Simcoe county, particularly in the northern part of it, the Northern Spy is no use. You have to wait about sixteen years for fruit ; and as soon as it begins to bear it begins to die. The Greening is no use at all in Simcoe. Seek-no-further does very well. It is a good keeper, but not much of a bearer. Tolman Sweet will keep as long as most of our apples except the Russet, and is as hardy as the Duchess. You can't get any variety for top-grafting better than the Tolman Sweet. The Alexander is generally classed as a fall apple. I think it will keep about as long as the Wealthy. It is one of the hardest and best bearers we have in our section. Two years ago the St. Lawrence spotted so badly that it was of no use. They spoiled on the tree. They

were subject to the fungus spot, and very deeply cracked. It is a poor keeper. Its season is so short that it is almost worthless. The fewer fall varieties we plant the better—(hear, hear)—because the equinox generally makes enough “fall” apples without planting fall varieties. (Laughter.) The Wealthy is new in our section, but from what I have seen of it I class it very hardy—almost next to the Duchess and Tolman Sweet; it is an early bearer and the fruit does not incline to spot, but it is inclined to drop from the trees. The Scott’s Winter seemed to do very well in our section. I recommend the American Golden Russet as the very best winter apple we have. It is the best bearer, and perfectly hardy.

Mr. DEMPSEY—What about the Ben Davis?

Mr. CASTON—I lost most of mine in the winter of 1884-5, but with that exception it stood the climate very well. That was an exceptional winter. I find the Ben Davis grafted on seedlings produces wonderful specimens that are very good. Years ago, when the nurserymen first sent agents out, the King of Tompkins was very largely planted. I do not know of a single specimen now that is living in our neighborhood. Of course a few miles make a great difference in some parts of Ontario. A certain variety will thrive in the south end of the county of Simcoe that will not thrive in the north; and yet go a little further towards the north-west, close to the mountain near Meaford, and they can grow the peaches where we cannot grow the Rhode Island Greening. The Red Pound I would recommend for the older portions of Ontario. It bears young and regular, is not very subject to spots, keeps well till February or even March, good for eating, and for cooking cannot be beaten.

Mr. DEMPSEY—I believe the Red Pound, Baxter and La Rue are all the same apple.

Mr. HOLDEN—I have the Red Pound and the Baxter in Barrie. There is a very great resemblance between the two. The Baxter inclines to spot badly with me. The Red Pound that I received from a friend near Barrie seemed to be a very clean and handsome apple. I think for that part of the country it ought to be a very hardy variety, which I don’t think the Baxter is.

Mr. T. H. RACE (Mitchell)—I have never found in the Colvert any quality to recommend it to farmers or any other class. Buyers coming into Perth county found two-thirds of the apples grown by the farmers were of this variety, and they would not touch them. They objected that they were poor keepers, and they had small spots early in the season. If the apple industry is to be profitable we must get the farmers to confine their varieties to two or three, or four or five, and only those that will stand shipping and will keep; and we will have to try to protect them from the nursery jobbers. The reason the Colvert is so common with us is that it is a free grower and is cheaper than almost any other that the jobbers can get hold of. They will go to the farmers and either recommend it, or sell them other varieties and put in this tree, and the farmer finds that instead of the apples he has ordered the great majority will turn out Colverts. The same might be said of the Tolman Sweet. I value that apple very highly; it is an excellent packer, but a free grower, and a handsome tree when young; and many farmers have been imposed on on that account. I know a dozen farmers that claim they did not order these trees, and that they have been imposed upon by nursery jobbers.

Mr. A. H. PETTIT (Grimsby)—There is no demand for Tolman Sweet and Yellow Bellflower in our section, even if well grown. I don’t think there is an apple for export that there is much more money in than the Colvert, if properly handled. They are clean and smooth, bear well—in fact, extra well—and always command a good price in the early markets in the Old Country—at least I have always found it so. The Northern Spy cannot be excelled in the southern portion of Ontario; and if our northern climate will just leave us with a few of these choice varieties I think we will grow them and make them very profitable. The King of Tompkins County we find very profitable in our section. It bears and grows very well.

Mr. CASTON—The farther north an apple is grown the better it will be in quality, and the longer it will keep. I find a difference in the soil. Apples grown on a warm

sandy loam have a better flavor than those grown on a clay soil. The Duchess of Olden burg comes to greater perfection in Simcoe county, or any place far north. The farther north you can grow it the better. There is a variety that has not been mentioned—the Pewaukee. I cannot speak positively it regard to it, because it is young.

Mr. DEMPSEY—If I were going to grow extensively I would start the list with Duchess of Oldenburg; I have seen a greater amount of money taken from it than any other. Next to that is the Colvert. A man in our section sold \$400 worth of Colverts from an acre; but he did not get that next year. It was an exceptional crop, and he handled them right, and sent them to the English market, and they brought a fancy price. I would not put the Colvert in my list for central Ontario; but for us I would plant Trenton next to Duchess to fill the gap, and you might depend upon a fancy price. I would then plant Fameuse and Wealthy—the two come in about together with us, and they both command good price. We got more money for Fameuse than any other variety this year. For winter we have nothing to compare with the Ben Davis, that we have tried to any great extent. The Pewaukee is as pretty as the King with us. It will produce two barrels to one King and fetch just as much. I don't think I could recommend any apple higher than the Pewaukee. I don't think there is much money in Golden Russets of late years. There is a lot of picking to the bushel, and with us the tree is liable to canker, gum-scald, and pass away something like the Northern Spy; still they are a hardier tree than the Spy. Any man that has pigs or cows cannot grow any fruit for them cheaper than Tolman Sweets. I don't object to them ground up in the hay. The Tolmans are also good for cider.

Dr. BURGESS (Hamilton)—It seems to me the only practical plan that would be of benefit to growers of apples would be for this society to publish a list of apples suitable for each county. It would cost very little more than the other plan—drawing the data from actual growers in those counties, and if necessary draw a distinction between those grown for market and for home consumption.

The PRESIDENT—There is no such thing as a division of varieties for northern, central and southern Ontario. It is purely a local matter. If we are going to get a correct list we must go to each section and get the list from the actual growers in that section. You will find a difference in the growth and productiveness of fruits in a very few miles. It has always appeared to me as a purely local matter, and as a matter very largely of experiment in the different sections. You have not only to consider heat and cold, but there is the grower himself—how is he going to cultivate that land? What kind of soil is it? is it drained or undrained? and what is he himself as a fruit-grower? does he understand anything about it or does he not? If he understands fruit-growing, are his principles proper, and will he carry them out? It is a very difficult matter for any body of men to sit down and attempt to frame a list for any particular section, and I think the more the matter is discussed the clearer we will all see that. The Colvert is just an instance of this point. In some sections we find it very profitable, in others they think nothing of it. In my opinion it is not an apple that I would care to keep for my own use, or that is esteemed as a local apple; but for export it stands high; it comes in at a season when prices are usually fair to good; it is a good producer, and you can generally rely on a very good crop. The matter of selection by seedlings is one that I have always taken a good deal of interest in, and always felt like encouraging. In the Algoma district they are talking that matter up very strongly. Their idea is to get the seeds of the best varieties, and by planting those seeds produce apples for their own use. I visited an orchard of that description. They had about thirty trees in the orchard, and about twenty trees in the field bearing. The crop was a grand one. It was about eight miles from Sault Ste Marie. Some of them looked very superior. They were mostly late varieties of seedlings, whereas they had Northern Spy, American Golden Russet, Ben Davis. The trees themselves looked very well then; but as the orchardist himself told me, some of them would kill back a little in the winter. Some of them would escape; but he nipped the wood back towards the end of the growing season for the purpose of preserving. However, they seem to have great faith in the production of apples in a cold section like that from seedlings. The Yellow Bellflower I do not care to

grow in my section, because it is so very variable. Sometimes you would get very fine specimens, but as a general rule the crop is indifferent, and they bear so much on the tips the tree is after a while very much out of shape; but for sections where it will succeed, and other varieties will not, it is a good apple; and the best apple for sections of that sort is the apple that will succeed in all, independent of quality or flavor. If they cannot produce an apple of the highest flavor, if they can produce one of medium flavor, then that is the best for that section; there is no use in attempting anything else —you are losing time. I believe we have come down to a time when we must look at these matters as specialties, and grow those varieties in the various sections to the highest state of perfection.

Mr. WELLINGTON (Toronto)—I understand this to be a discussion of varieties fitted for the central and northern portions of Canada. Now, while the Colvert and King, and certain other varieties that have been mentioned, may do well in the south, we should not drag them into this discussion at all, because a great many may think, from favorable remarks made, that they may be suitable for those sections. I would also protest against the list as furnished by Mr. Beall going out as being endorsed by this society. The fact of the Rhode Island Greening succeeding with one or two men near Lindsay is no data to go by to show that it is a hardy variety. We all know to the contrary, and if we allow that variety to stand in his list unchallenged, a great many people, taking our report, may plant a variety only to meet with misfortune. Many varieties named are very good, but there are other varieties that have been sufficiently tested that are better for northern sections. I do not speak of the south, where you can grow the Northern Spy, and the King, and the more tender varieties, but I speak of the central and northern sections. Your remarks I fully concur in regarding the selection of varieties for localities. It must be tested there, and we must go by the actual experience of certain sections. We want a list that will stand generally. We can give a list that have been tested and proved hardy. The Magog Redstreak, Scott's Winter, and Longfield and Anis are varieties that are certainly hardy. They are as hardy, if not harder, than the Duchess, and that is the class we must recommend for the north, if we undertake to recommend. The Tetofsky Mr. Beall classes as worthless. I object to that. It is a valuable apple in the north. It is a good cooker, and is hardy. It will stand where the Red Astracan will not stand. For that reason it should not be set down as worthless. Yellow Transparent is certainly good, but the great trouble is that it will overbear, and unless thinned out it will disappoint on account of its size. That is the experience of those who have raised it. Dr. Hoskins, of Vermont, I consider an authority on hardy varieties. He has tested them as thoroughly as anyone living in a cold section, and the varieties I have named are varieties that he has thoroughly tested, and that he recommends. I have seen them tested, and seen the fruit from them grown in our own section, and I believe that they are very desirable varieties for the northern section.

The Secretary moved, seconded by A. M. Smith, that a committee be appointed by the chair to make out a list of desirable fruits for cultivation in each county in Ontario.

The PRESIDENT thought that committee would have a hard job. He thought the work could be done best by local men, who have had experience in the various townships.

The SECRETARY—I will not press the resolution.

Mr. A. H. PETTIT—I suggest that it be divided into three sections—north-eastern, north-western, and southern Ontario, and that a committee be appointed to recommend four best varieties for summer, four best for autumn, and eight best for winter, and that they report at the next meeting. (Hear, hear.)

The PRESIDENT—That is in the right direction, but go a little further. I would suggest that this committee should frame a list, after taking evidence in the various counties as to the varieties. Confine the division to counties in the meantime, and perhaps after a while we can come down a little lower.

Mr. MORDEN—The county farmers' institutes could do something in the matter.

Mr. J. A. MORTON (Wingham) then moved the following motion, seconded by Mr. WOOLVERTON, that the matter of the preparation of lists of apples for cultivation in this province be referred to a committee consisting of the directorate.

BLACK HEART.

WHAT VARIETIES ARE MOST SUBJECT TO IT, AND HOW CAN IT BE PREVENTED ?

Mr. MORRIS—The varieties most subject to it are those that are most tender. I have seen it in all varieties in different parts of the country. I account for it by a very severe winter, which freezes the sap in the trees, and when they get a little aged it turns black. I have seen whole nurseries ruined by trimming young trees in the winter time—cutting the limbs off close to the stem. That part freezes there, and kills the wood to the heart, and that will extend downwards the next summer. Perhaps the black sap will ooze out of that and run down the body of the tree, and the tree may be easily detected by the bark being dark from this sap.

Mr. E. MORDEN—All the farmers in our section are pruning in the winter, and I have not heard any complaint.

Mr. MORRIS—I don't think it would injure large trees much to cut off small limbs, but large limbs it would. I have noticed trees sent out by nurseries that have not been properly grown, quite brushy up the stem. That brush being cut off just before being sent out, the tree when planted by the farmer would not make much growth for a year or two, and the winter winds would turn that tree black-heart and kill it, although quite healthy when it left the nursery.

Mr. MORDEN—Do they prune trees in winter in Perth or the Collingwood district?

The PRESIDENT—They generally, I think, in our section begin pruning in March.

Mr. BARTLETT (London)—Pruning in winter caused destruction of a nursery in London of fifteen or twenty acres.

Mr. MORRIS—I was there when the men were trimming the trees. They had a fire in a shed to warm themselves by. I told the young man he was ruining his stock, but he laughed at me, said his father and grandfather had been nurserymen all their lives, and they knew. I visited that nursery the next fall, and found all the trees black-hearted.

Mr. CASTON—Black-heart is not so likely in the Duchess of Oldenburg on account of the close wood. I found trees I pruned in February bled all the next summer, even though I tried grafting wax. Trees pruned in June never bleed.

Mr. MORTON—There would not be the same tendency in thoroughly ripened wood that there would be in trees consisting of half-seasoned wood, because the amount of moisture is greater and the matured cells form a better conduit pipe for the sap.

The SECRETARY—I do not see any objection in southern Ontario to pruning in winter in mild weather, when the wood is not frozen if the wound is immediately protected in some way from the influences of the atmosphere. That is not so necessary in June, because it will grow over before the part becomes dried out.

Mr. MORRIS—In June the bark is very subject to become loose. You cannot step on a limb or put a ladder on a limb but what it will loosen the bark from the tree, and do a great deal of damage. That is the danger of June pruning.

HORTICULTURAL SPECIALTIES FOR THE CANADIAN FARMER.

The following paper on this subject was read by Mr. Woolverton, Secretary of the Association :—

This is an age of specialties. The time was in the history of our country when every farmer had of necessity to be a "Jack-of-all-trades." He was an agriculturist in the broadest sense of the term. Every variety of produce that was needed, either for his family or for his stock, was grown in his own fields. He bought no fertilizers for his soil

but depended wholly for his supply upon the annual clearing of his barnyard, be the stock sufficient for his crops or insufficient. He was a horticulturist, giving high culture to a small garden near the house, in which grew both the vegetables for the kitchen and the flowers for the parlor table. He was an apiarist and kept several hives of bees to furnish his own table with honey, and occasionally to furnish a surplus for the market. He was a dairyman and a stock breeder, having always a comfortable supply of butter and milk for home uses, and as much for market as, united with the eggs from his poultry department, could be exchanged for the prints and ribbons necessary for the adornment of his wife and daughters. He was also a carpenter, and when a new barn was needed he hewed the timber, constructed the frame, shingled the roof, and completed the building. He was a wagon and sleigh maker, and many an hour of winter leisure was well spent in making a woodsleigh, or in repairing his wagon. He made his own ropes, he tanned his own cow-skins, he made his own brine and butter tubs, he patched his own boots, and he even ground his own flour. In short the Canadian farmer of a hundred years ago knew little of the advantages of division of labor, but found it absolutely necessary to know a little about all the branches of work.

But now the circumstances have wholly changed. We have advanced in wealth and in culture. Specialties rule. A man of to-day must be a devotee of one idea if he would succeed. The post-office is no longer combined with the grocery, and the shoemaker has removed his bench from the dry-goods store.

Agriculture is the wide word; horticulture the narrow one. The former refers to the field, to the broad acres devoted to grain or stock; the latter to the garden, with its fruits, its flowers and its vegetables. So extended, however, has the culture of these become in the more favored portions of Ontario, that the word horticulture has become in some parts almost co-extensive with that of agriculture, and several large sections of the country are competing with each other for the title of "The Garden of Canada."

The aim of the writer of this paper is to indicate the pathway to practical success for the agriculturist who wishes to take up some horticultural specialty, and to engage for profit more or less, according to his means, in the culture of some kind of fruit, flower or vegetable in addition to his ordinary round of farm work. This he may do judiciously and make it serve his best interests; and in like manner might the fruit grower do a certain amount of farming, and make it serve to advance the profits of his proper business. But it is by no means necessary that the fruit grower should be also a farmer, nor that the farmer should also be a fruit grower, any more than it is essential to his success that he be a shoemaker, or a blacksmith. The day is passed when a man can profitably engage in many lines. Each of the subdivisions named above has grown into a science. Books and papers innumerable, written by men of practical experience, are now published on stock breeding, bee culture, horticulture, etc. Men are finding out in this year of 1889 that they must make a special study of that line of avocation which they intend to pursue, or others will surely surpass them in it. It has now become just as necessary for the gardener or the fruit grower to be trained to his profession if he would succeed as it is for the doctor or for the lawyer. I do not mean that he should be trained by the study of books alone, but by the study of books and journals relating to his life work, united with constant daily practical experience, under the guidance, if possible, of one who is himself a professional. In this way only can a man hope speedily to gain the acquirements needed for success. If it is too late in life for a man to become thus equipped himself, by all means have the boys thus prepared for their life work. The plan of living out for a year or two with a gardener, or a fruit grower, a stock breeder, or if he can afford it, at such a place as the Ontario Agricultural College, until the young man has learned the best methods of doing each thing, cannot be too highly commended.

At all events the time has come when our Canadian farmers must leave the old ruts if they would prosper, and turn their attention and thoughts and study to some one special branch. I do not say that horticulture surpasses every other and that it is the most profitable of any, but to me it is a charming pursuit, and I have faith in it as a reliable source of income, providing it is pursued with the same determination as that which characterises men in other lines of business.

A good apple orchard pays the farmer. But, says one, I know a farmer right there at Grimsby who cut down a good apple orchard only last winter. True enough, but did you never know of a man giving up stock breeding or bee farming in disgust? There are always men to be found who grow impatient and give up, just at the point where they are within reach of success.

I do not think that we, as members of this Association, should go about the country advising farmers generally to plant out their farms to apple orchards, or even to plant large commercial orchards. The expense connected with raising a large apple orchard to bearing size is far greater than some people are willing to admit. A writer in *Popular Gardening* figures out very carefully on paper the cost and value of an apple orchard and makes out that one acre would bring \$313.15 over expenses during the first ten years. He plants 100 trees per acre, and by seeding down to clover estimates his expense for cultivation during the ten years at about \$10. He placed the cost of the annual pruning at 50 cents and the rent at \$50 per annum, considering that three-quarters of the acre may be profitable cropped. Now if any one here has cleared \$300 per acre from his apple orchard during the first ten years, I think he is a notable exception. My apple trees may be stubborn, but they seldom bear any fruit worth gathering before they reach the age of ten years, and my Northern Spy orchard is seventeen years old and it is only during the last two years that it has yielded me any returns worth speaking of. Baldwins and Greenings may, under exceptional circumstances, yield some returns within ten years, but even these varieties do not as a rule, and indeed should not, because for the first ten years after planting the orchard should be encouraged by frequent cultivation and manuring, to make as much wood as possible and not be expected to bear fruit. Neither do I think that we are wise, as members of this organisation, which holds so high a position in our land, and whose utterances are looked upon as worthy of public confidence, in following the habit of many who now-a-days picture only the bright side of fruit culture, giving glowing statements of its profits and concealing its losses. I am prepared to make free confession here to day of both sides with regard to my apples. I can show fancy figures received from my shipments as good as anybody's. I have here account sales of my apples sold in 1887 and 1888, from which you can see that my choice Gravenstein and Kings have sold in London, England, as high as \$5 and \$6 per barrel. And I can tell you of further fine sales that so encouraged me that last season I shipped my whole crop, some twelve hundred barrels, to that market; but the last sales took all the gilt off the season's business, for they reached the metropolis when the market was glutted and one car load was sold for the freight; another, containing russets and other prime varieties, sold so badly that a claim was made upon me from my English salesman of \$35. The provoking part of all was that a week after mine were sold at \$1.50 to \$2, or about the amount of the charges, prices suddenly jumped to \$3 and \$4. Now I have no doubt many others here present can relate a story of similar unfortunate experiences. Mr. J. B. Osborne, of Beamsville, once shipped 1,300 barrels of apples to England and lost \$1,300 on them; and a neighbor of mine, Mr. C. S. Nelles, shipped all his prime winter apples to London, England, last December, packing carefully and well, and might as well have tossed them over the bank in lake Ontario. Let us speak out, gentlemen, on these points. Confess our failures. Men in other lines of business do not talk constantly about their enormous profits, it would not be politic; and if we are found constantly magnifying the profits of fruit culture, we will be placing ourselves in a false position before the public; they will get the idea that we are nurserymen who have fruit trees to sell, instead of fruit growers who have fruit to sell.

But does all this discouragement frighten us out of our business? By no means; for while it is unwise to advise everyone to rush into apple culture for profit, the specialist would be a fool who would give up because of one or two season's failure. And I think also that the farmer who has a good orchard of fine varieties, just in bearing condition, and who is disgusted because of the difficulties and low price of apples, and who cuts down such an orchard and grubbs it out for the purpose of devoting the ground to some farm crops, is assuredly "penny wise and pound foolish." He is throwing away invested capital and reducing the value of that land from \$100 to \$200 per acre. Why an apple

orchard of twenty years standing, of productive varieties, will surely average one hundred barrels per annum, and most farmers can sell these at home at \$1 per barrel for the fruit. What else would yield that sum? This is not more than the acre should produce when you consider the time and expense that has been put upon that orchard to bring it to its present condition.

But many will say, "My apple orchard does not yield that amount of fruit." No, probably not; unless you are making it a specialty. Nothing pays, now-a-days, without special care. An apple orchard, *neglected*, certainly does not pay. How could it yield crop after crop without culture, without manure, and withal, receiving in place of judicious pruning, an annual butchering with the saw and the axe. Would any crop pay under similar treatment?

The apple needs potash. It is year after year extracting this element from the ground, and, if you do not supply, and other fertilizers besides, such as phosphoric acid, nitrates and lime, according to the requirements of the soil, the orchard will soon cease to bear fruit in any quantity, or of any degree of excellence. One-half of our Canadian orchards are starving to death. No farmer would expect a good crop of wheat or potatoes, without the use of manure; why then does he expect fine apples without it, and cut down his trees because, neglected, they will not do what no other crop could do? Do you advise cultivating an apple orchard? asked some one. You may as well ask a farmer "Do you advise cultivating your corn crop?" Unless your orchard is vigorous and presents a healthy dark green foliage, by all means work it up, plowing the ground shallow so as to disturb the roots as little as possible, sowing to buckwheat, or keep the ground cultivated any way until you have developed a good healthy growth of the trees. Then you may seed down for a few years at a time. The orchard must have special care, and if a man has not time to give it special care, he may as well be rid of it. Insects must be fought. Large numbers of orchards in this Niagara peninsula are infested with the oyster-shell bark louse, an insect so small that it passes unnoticed; it hides itself under its shell, and there seeks the health and fruitfulness out of the trees. The writer has experimented with soapsuds, kerosene, caustic soda, washing soda. The latter is the most economical. A strong solution may be made in a barrel, and about the first of June the trunks and as much more of the trees as appears to be affected, must be thoroughly washed with the solution at which time the insects are almost microscopic in size, not yet covered by the scale, and are very easily destroyed.

The Codling moth must be fought, and conquered with Paris green, hence this insect will destroy one-third of the finest of the crop; and the Canker worm may be destroyed with the same preparation. The mice must be guarded against every fall and winter, the tent caterpillar must be hunted out and diligently destroyed, and many other important precautions thoughtfully attended to.

And after all, when at last a bountiful crop rewards such patient labor, the same careful attention must be paid to the matter of gathering and marketing, or else all previous industry will lose its reward. Eternal vigilance is the price of success. It pays to use a good ladder, and a swing handle basket with a hook attached, and to gather every good apple with a gentle grasp of the hand, taking care that not even finger marks shall show upon the fruit when housed. It pays to spend time enough over the packing to look at every single apple and to properly assort them into at least three grades. It pays to pack carefully the finest in clean new barrels, lining head and tail end with white paper, and then the grower may hopefully consign his crop to some honorable and responsible salesman. But failing in all this careful attention, is it any wonder that many of our farmers, who find poor sale for the scrubby products of an uncared for orchard, should declare apple culture unprofitable.

I should include, among my remarks on apple culture, the importance of a judicious selection of varieties. The Early Harvest, the Fall Pippin, the Rambo, and the Snow, are subject to the spot. The Spitzenburg no longer produce a crop with any certainty; therefore discard these varieties in southern Ontario and plant Yellow Transparent, Red

Astracan, Duchess of Oldenburg, Gravenstein, Cranberry Pippin, Baldwin, Spy, King, Roxbury and Golden Russets. Such varieties as these will pay for the most careful attention, and not prove a source of disappointment as the other varieties have done of late in so many instances.

Strawberry culture frequently pays the agriculturist, but not unless he has the time and the means to give it more than ordinary attention. Many a man has already more irons in the fire than he can attend to, and he will surely get burned with one of them, if not with several. But, given the conditions necessary, and success will surely follow. They are such as, a good rich loam soil; plenty of nitrogenous manure from the barnyard in the autumn—the late Mr. E. P. Roe advised 60 tons per acre; a mulch of straw in December as soon as the ground is frozen; constant cultivation all summer, both before and after fruiting season; and careful gathering and marketing. Now if any agriculturist is prepared to make a specialty of strawberry culture in this way, let him try the Crescent, the Wilson, and the Sharpless, and go to work with confidence, and he will succeed. Four and five thousand quarts per acre are reported as among the possibilities, especially with Crescents fertilized with Captain Jack.

The same advice may be given with reference to the culture of raspberries and blackberries. Grown as many people grow them, without sufficient cultivation, without manure, without pruning, they cost more than they come to. Any specialty which the agriculturist undertakes beyond what he has time, money, and knowledge to care for in the best manner, will prove an eyesore to him, and a certain loss. The berry patch, of which one-half the produce is thistles, and which is inseparable on account of numerous unpruned straggling branches is a disgrace; but our experience is that where a plantation of Cuthbert red, or Gregg black raspberries, or Kittatinny blackberries, has received proper treatment and attention, there is money in them, even at the low prices lately prevailing. The day is passed when we could get from 17 to 23 cents per quart for our large Kittatinny berries, and from 15 to 20 cents for red raspberries. A fortune might have been made out of them in those days; but even now good returns may be counted upon by giving them careful and thorough culture.

A fine specialty in the horticultural line is the currant. "Bah," says some one, "the worm! it will destroy the bushes." My friend, that is one reason for planting them freely—you will have less competition. Plant an acre of such varieties as the Cherry and Fay's Prolific, on good rich clay loam well drained; give them the best of cultivation and manure as you would for a good crop of potatoes; prune back in spring one-third of the last year's growth to induce branching, and to keep the stems stocky; give a good sprinkling of hellebore and water whenever the currant worm appears; and ship your crop to market in twelve-quart baskets or strawberry crates, and you will succeed.

In short, our country has advanced beyond the time when it pays to be a Jack-of-all-trades. Our agricultural friends must now be specialists—they must in short be professionals in the lines they pursue. Division of labor must be more and more the habit of the age among our farmers. The rule must be, not to follow in the line of one's neighbor, and do just what he does, so that when one man devotes his attention to some specialty, every other man in the section rushes into the same thing until there is a surplus of that article, and no profit in it; but on the other hand, to chose each a separate line of his own, and to persevere in it. Let him make a study of his subject, reading those books and magazines which treat of it, talking with those who have experience, and in this way let him pursue with confidence his chosen line of work.

Thus, I am convinced, shall days of greater prosperity dawn upon our agricultural community, and less hardship result to our country at large from a general failure of any one department of industry.

On assembling in the afternoon, the question box was opened and the following subjects considered, viz.:

A NEW FUNGUS.

Q—Has any member present noticed a disease in the suckers of the Northern Spy?

Mr. A. W. PEART (Nelson)—I have just cut off some suckers that were covered with blisters—like spots of yellowish tint. Later on they seem to take on a darker color, more like the wood. [Mr. Peart produced the suckers].

PLANTING PEARS.

Q—Would it be wise to plant pears on a gravel loam rich and abundant in organic matter, with a sub-soil also of gravel containing large quantities of soil to a depth varying from five to eleven feet, based in the first place upon rock and next upon clay? The field does not require even surface drainage. If not wise, why?

Mr. DEMPSEY—There are pears that succeed in such soil. It is necessary that we should grow them and cut the top root; but by thoroughly manuring them we have succeeded. This year we have succeeded with Beurre Hardy. We grow very nice Bartletts on soil like that. It does not do for us to neglect the manure every year, and thorough cultivation; and we want to be very cautious about the roots going too far down.

Prof. SAUNDERS—I have had experience with both kinds of soil, and I found that pears planted on lighter soil—not as good as described in the question—had less blight than those on the heavier soil, and I thought they did as well as regards fruiting. That disease which Mr. Peart has brought specimens of is something quite new to me. It is evidently a fungus growth, and in cutting through one of the black spots it is clearly to be seen that the ramifications of the fungus in striking into the substance of the bark has caused the death of the bark immediately under where the spot occurs, and that the older spots have under them the previously healthy bark completely withered and perished. If such a disease as that were to be very prevalent on any of our trees it would certainly seriously interfere with their growth and productiveness; because trees with the bark so injured, and with so many dead spots as these twigs have, would not be able to carry on their functions properly and mature their fruit. I know nothing about the disease, and could not suggest any remedy. I would be happy to take samples with me.

Mr. PEART—The other apples in the orchard are not affected in this way at all. In my neighbors' orchards I found some places diseased, but not to any great extent.

The PRESIDENT—Has it been confined to the one variety in your orchard?

Mr. PEART—I can say that, and the trees themselves are healthy, vigorous trees; it does not seem to affect them.

COLD STORAGE.

Q—Is the cold storage of fruit and vegetables fully worked? How is the temperature best regulated in the storehouse?

¹⁸⁹³ The SECRETARY—Very little experience has been had in cold storage in Ontario. It is done a good deal in the United States, and I believe there is a process by the use of anhydrous ammonia, by which cold storage is better effected than by any other means yet tried.

Mr. RICE (Port Huron, Mich.)—In Wayne county, N. Y., they practice it a good deal, and they do not approve of ice in the cold storage of apples. The idea seems to be to put your apples in a shed and keep them as cool as possible, and have it arranged to admit the cold air at night. If it is too cool, shut it off. They prefer about 28 to 30 degrees if they can keep it at that point.

Mr. DEMPSEY—I have known Flemish Beauty pears kept perfectly till Christmas in an ice apartment formed with boards in an ordinary cellar; but when parties opened the

door connected with the furnace room all were spoiled. We have had no difficulty in keeping fruits any length of time, but they perished as soon as we took them out; so we abandoned keeping with ice. A gentleman in Michigan, named Baldwin, succeeded in keeping Duchess of Oldenburg apples nicely till July in a building above ground, sawdust walls, a confined air chamber between the two sawdust walls, or one might be a paper wall. When sawdust was difficult to get he used straw only much thicker. He had treble doors and windows, which he would throw open on opposite sides of the building on cold nights, and reduce the temperature to 25 degrees if possible, and then he closed the doors and depended on the cold air remaining, by having the apartment as perfectly sealed as possible. A temperature of 40 degrees he told me was quite sufficient so long as it was even.

Mr. GOULINLOCK—We opened thirty barrels last week and they are keeping very well, in D. D. Wilson's ice storehouse where he keeps his eggs. Two years ago my son-in-law kept six hundred barrels till spring, and only lost twelve barrels. We have some there now and they seem to be keeping well.

The PRESIDENT—Where there is ice storage the fruit seems to decay very rapidly when it is taken out of that storage.

Mr. A. M. SMITH (St. Catharines)—At the horticultural meeting in Rochester, N. Y., a short time ago, this matter was discussed, and a building was described such as Mr. Dempsey mentions; and from those buildings, leading out underground some eight or ten feet, either on to a side hill or into the wall, were some six or eight inch pipe to let the air in, after being reduced to the natural temperature of earth; and then there were ventilators to let it out or to create a draft, if necessary, to draw it in, and these could be shut off or opened. Fruit can be kept in that way nearly as well as on ice, and it did not perish as quickly when exposed to the air.

Mr. RICE—The objection to that is that the sawdust produces dry rot in the building, and our people prefer to use paper and make separate air chambers. Then the draft through the ground does not give sufficient cold, so that whenever the nights are colder than the air would be coming through the ground, it is better to open the doors to give ventilation. Forty-eight degrees is the degree they get by the air coming through the ground; and then the pipes were not considered large enough for giving sufficient ventilation.

Prof. SAUNDERS—At a recent meeting in Wolfville a number of samples were brought which showed that a fungus or black growth had developed at a furious rate on apples after they had been barreled in a cellar. It was due no doubt to the presence of moisture, with a sufficiently high temperature to promote fungus growing. Apples shipped from Nova Scotia this year have been returned as almost absolutely worthless, because the spots have grown to such an extent that they have been disfigured so as to be unmarketable; and in connection with this apple spot or fungus another mould has shown itself so as to make the apple more unsightly.

Mr. A. M. SMITH—We frequently found in packing among Snow apples and sometimes Northern Spies, that the spots were enlarging, and another fungus made its appearance in the form of a white mould, and the apples soon decayed.

Mr. ALEXANDER (Hamilton)—I had some Pippins affected in the way Prof. Saunders speaks of—each apple having a dozen or score of black spots. The cellar was perfectly dry, but I put it down to the high temperature—50 degrees sometimes.

The SECRETARY—if the apple-spot spreads after the fruit is packed, it is very important for us to know it, so that we may the more carefully keep out the affected ones. I had not thought of the possibility of sound apples being affected after they were put away, but I have seen it said within a few days, by a scientist, that the spores of this fungus would germinate and spread the disease, even after the fruit is packed away in the cellar.

Prof. SAUNDERS—in Nova Scotia a gentleman brought samples of apples that had been binned and barreled, and you could see very small spots on those that had been

kept in bins ; and on those that had been kept in barrels these spots appeared greatly enlarged. It seemed to be a development of the fungus growth that had begun in the apple—the spots not being any larger than pin-heads, or perhaps not as large as that. I think this difficulty could be got over by fruit growers putting their apples either in barrels or bins under the effect of sulphurous acid gas, which could be made very easily in the cellar, and that would permeate and kill the fungus that was on the apple, and I think prevent the spreading of it. It is a remedy so easily applied that any one could try it.

Mr. MORTON—Have you any data whereby you could fix the temperature at which the fungus would not grow ?

Prof. SAUNDERS—No.

THE BAKER GERMAN PRUNE.

Q—Does any member know anything of a plum or prune called the Baker, said to be successfully grown near Collingwood ?

The SECRETARY—At our meeting last July at Collingwood we found we were in a great plum country, and this plum was shown to us. It is simply a variety of the German prune which has been propagated from seed, and is grown very largely in that vicinity, and they consider it one of the best prunes that they have met with. It was highly commended and noticed in our report, but I do not think any of our nurserymen have propagated it.

The PRESIDENT—There was some fruit of it sent, after ripening, to me, and the quality was superior to the German prune. Growers told us that they make more money out of that local plum than anything else on the list that they have, and they have most of our varieties.

NORTHERN OR SOUTHERN GROWN TREES.

Q—Is the climate of New York better for raising nursery stock than Ontario, to such an extent that many Canadian nurserymen really import what they are selling ? Are such imported trees as long-lived as native growers ?

Mr. MORRIS—I claim that the climate of Niagara peninsula is fully as good for raising nursery stock as New York state : and nurserymen of Niagara district grow the bulk of what they sell. There is no nurseryman in Canada or the States that can grow all they sell, because they will run short in some varieties. The fashions change. There will be a run on a certain class of plants in four years that they are not expected to meet, and no matter how extensive the nursery they will have to buy to keep the assortment up.

Mr. MORDEN—There is a good deal of quackery in this matter. There is an idea abroad that it makes a vast difference as to the particular climate in which a tree is raised. My idea is that you get the best article from the place that is best suited to produce it—it may be north, and it may be south. As a general rule, it is safe to get our stock in the same latitude as we wish to plant in. Sometimes we can get a better article grown south of us than any where else.

Prof. SAUNDERS—Mr. Morden's doctrine may be safe for Niagara peninsula, but I think outside of that it would not be. Where climatic influences are unfavorable, it is very important that we get trees, grown from similar climates ; and if you take them north you want to get the trees grown as far north as possible ; and therefore Canadian-grown trees are very much better for the northern section of this Province than those that come from as far south as Rochester, although it may be admitted that trees may be grown easier there—grown with less cost to the nurseryman, where the climate and soil are favorable to that growth ; but to argue that we should go where the trees grow best for the tree that we want to grow best, is an argument that would not stand. For the Ottawa district the trees that grow best are the trees that have grown as far north as we can get them.

Mr. MORRIS—To make healthy trees they must be grown while they are small, in a mild climate. Niagara peninsula is particularly adapted for nurseries on that account. I have known nurseries started north of London failures nearly every time, from the trees becoming all black-hearted while they are young.

Mr. RICE—In Michigan we cannot grow apple trees when they are young without getting them black-hearted, even as far south as Toledo, but we go down to Rochester and get good healthy trees, and we can raise good orchards.

The SECRETARY—I got a 1,000 trees from Xenia, Ohio, once, and planted them in Niagara district, and only about one-tenth grew well; but they were entirely different from the Ontario trees. They were a long, succulent growth, and far more tender than those from our own raising.

Q. Do not nurserymen represent that their stock is home grown when they are really imported?

Mr. MORTON—No.

The PRESIDENT—We might talk all the afternoon about this subject. It is not supposed that travelling agents are all honest. They are like the rest of humanity, and while I like to indulge in a little healthy abuse of a tree agent now and then, I have a good deal of sympathy for them, because if it were not for them we would not be as advanced in the science of horticulture as we are. (Hear, hear.) They have introduced varieties into different sections that we never would have known anything about otherwise. As far as we have discovered, there is no respectable nurseryman that desires to misrepresent, but these things will occur sometimes.

FORESTRY.

The following paper, contributed by I. C. Chapais, St. Denis, Quebec, was read:—

In our Dominion of Canada some boldness is necessary to speak of forest preservation and restoration. In vain we show that countries once covered with forests as luxuriant as ours are now suffering for want of firewood and timber; the settler who has yet his axe in hand to fell the trees growing on the piece of land he intends to sow, answers us with a sneer. For him the tree is still an enemy, and you cannot make him believe that a day may come when he will regret having treated it too long as such. On the other hand, the lumber merchant who owns forest limits apparently inexhaustible, wants to make a fortune as quickly as he can, and turns a deaf ear to economists who try to make him take forethought for the coming generation.

And yet many districts covered with forests thirty years ago contain now no more firewood nor timber. Very often even agriculture has derived no benefit whatever from a clearing of the trees so foolishly made, because it was made on land quite unfit for cultivation now that the beneficial influence of the ashes of the wood burnt during the clearing is no more available. I know whole regions which were cleared in that way by settlers who had to desert the land soon after, because it was worth nothing. Such districts would have been as many inexhaustible wood reserves for future generations, who during an almost endless period of time would find on them all the wood they want. To-day these same districts are quite useless in every respect.

As I am invited to set forth before you to-day my ideas on the forestry question I beg you to allow me to express the opinion that if we wish to be listened to by the farmer who is always prejudiced against ideas quite new to him, we must, for the present, speak only of what is the least apt to run counter to his prejudices. If this is admitted I think we must specially insist on what follows:

Let us request our Governments to give directions to their land surveyors chosen to fix the boundaries of the new townships opened every year to colonisation to point out with precision in their reports the regions unfit for agriculture, in order that they never be granted for agricultural purposes.

Let us further urge that the wood reserves thus created, as well as the forest limits intended for the manufacture of timber, be protected against a systematical and complete devastation to which they are subjected by too greedy limit owners, and against fire. Forests can be protected against the aforesaid devastation by enacting regulations to prevent the useless destruction of young trees and the ill-timed felling of trees not having yet reached their full growths. As to protection against fire, the most effectual would be the promulgation of a regulation to compel woodmen to free the land from boughs, chips, shavings, branches, and other wastage, which tend to increase in a very large proportion the number of bush fires. I know that this proposal will be called an impossibility, specially by woodmen; but "the word impossible does not belong to the French language," said a famous French general, and I don't think it belongs any more to the English language.

As to the question of replanting in places where the forest has been destroyed blindly, it is still more difficult to interest the farmer about it than it is to speak to him of forest preservation and protection. His forestry education is yet too superficial to make him apt to understand that there is not only a benefit, but that it is a necessity to replant in denuded regions. In vain we mention the fact that there are foreign countries where, by the complete clearing of mountain slopes, fearful periodical floods are caused, which put under the obligation of being banked up the towns situated on the banks of rivers taking their rise on these slopes to prevent them from being overflowed. Such is the case for many towns situated on the river Loire, in France. We begin even to see the same occurrence in our own country. The river St. Lawrence is now subject to much more considerable floods than it was formerly, and we have to-day the sight of the town of Montreal protected by a dike, the same as the towns of France; yet for us this is only the beginning. But all that is insufficient to convince the farmer that replanting is necessary.

Nevertheless, replanting is necessary. As I just said, the farmer egotistically says that he won't plant trees, the shade of which he will not enjoy. A good farmer told me once: "You want me to plant trees; I am not green; I would be dead a long time before the trees that I would plant now would be large enough to shade my grave." Vainly I tried to convince him that he was young enough to enjoy the fruit of his toil; that trees grow quicker than it is generally believed. None so deaf as those who won't hear. Happily, there is another way of restoring forests, besides the mode of replanting which is so repugnant to the farmer. Almost always in the regions deprived of wood it is an easy matter to bring the land to produce by itself a good growth of trees. It is what I would call the natural restoration of forests, and please allow me to quote here a short part of a chapter I wrote on this subject four years ago in my book, *The Canadian Forester's Illustrated Guide*.

Extensive districts, long cleared of their forest growth, frequently cover themselves again with wood, if care is taken to aid nature in her operations. Generally speaking, plains and damp marshes, where a few wretched stunted trees show themselves here and there, are susceptible of this treatment. Drainage, by means of deep open ditches, of sufficient frequency to admit of the tree growing, if not of perfectly drying the land, is the only thing necessary. The moment that this has been done a multitude of little trees will spring up, which were only waiting for this amelioration to show themselves, and the new growth is usually so prolific and so rapid that we should be inclined to call it spontaneous, did we not know how long seeds would lie dormant in the ground, until all things necessary for their growth were present. The same thing occurs on certain hill-sides, where, protection being afforded against the teeth and hoofs of cattle, their hoary heads soon become crowned with a wreath of luxuriant verdure.

I must state that to-day this natural restoration is well understood by our farmers, and I can prove it by an example. The tourist who travels by the Intercolonial Railway from Quebec down to Rimouski, in the Province of Quebec, goes through a region of one hundred and eighty miles which forty years ago was far the greatest part in forest. This forest has been felled, burnt, and has made place to numerous settlements. But the land forming the slope of the mountain's range at the bottom of which runs the railroad, right through the aforesaid region, having been found unfit for cultivation, has been left by itself to make a second growth of wood. The new trees have been thinned, well taken care of, kept uninjured from the teeth and feet of animals, and now, from Quebec to Rimouski, if you travel through that region during the month of April, you will hear

everywhere the gay French songs of *A la claire Fontaine*, *En Roullant ma boule*, and *Vive la Canadienne* sung to the top of his voice by the young farmer making sugar in the fine maple bushes grown on the land once wrongfully deprived of its trees by his father.

I dwelt, perhaps, too much on my subject, but I will offer as an excuse that it is so wide and so attractive that I always find it difficult to be concise when I treat it. I hope, however, that I have not been too annoying.

FORESTRY ABROAD AND AT HOME.

Mr. R. W. PHIPPS, Clerk of Forestry for Ontario, addressed the convention as follows : I have no doubt that you all who are so much interested in fruit growing are to a certain extent interested in general tree growing, which is a matter very similar, and which has a great bearing on the other. We will go for a moment into the consideration of first principles in this matter, and we will look at what have been the effects in other countries—for there is very little use in general speculation without we have some facts to go on. We find that in the Old World the whole basin of the Mediterranean, the countries bordering thereon—Syria, Palestine, and all those ancient countries which formerly produced such magnificent armies, which flourished so greatly—we find them to-day to a very great extent a desert. We ask the reason why principalities which formerly poured forth their legions could not produce a company. It is a waste of sand. It is a desert. We find but one reason, and that is, these countries have stripped the land of the forests which formerly in every direction embowered the soil. Nobody would make any objection to a proper clearing of forest, for farms are as necessary to us as anything else ; but in these examples which I am quoting they have cleared too much. They have cleared not only the arable land, fruitful for food, but they have cleared the side of the mountain ; they have cleared the useless swamp ; they have cleared the rocky precipice, which might well have been left in the trees with which nature planted it, and which would forever, with their natural habits of reproduction, have continued themselves in strength and beauty. Had this been allowed, had the useless parts of the land—useless except for forest—been allowed to perpetuate themselves in forest, the fruitful soil would never have lost its fruitfulness, and never have ceased to yield its proper return. We find the contrary. We find in this country, where all has been cleared, that a very great proportion now is desolate and yields no longer that return which formerly it did. It yields no more the men, the oxen, the wheat, the great ships, the armies, the navies—nothing is there.

Now, applying the principles of science to this, we find the reason : that the tree, that the forest, that the grove, is necessary to give us the proper returns of the summer rain, of the spring showers, of the gentle influence of moisture over the land. To examine more minutely into this, perhaps we will spend a few minutes in considering the manner in which the tree joins with the atmosphere above in producing and perpetuating rain at the time when it is needed. I would ask you to consider with me, the moment that the tree draws its nourishment from the roots, and partly from the atmosphere, that that nourishment brought up from the roots is carried up by the very large amount of water which passes up to the leaves ; that this nourishment is there joined to the nourishment the atmosphere affords, and then the food for the tree passes back to where it is needed, while the water which carried it up, which is the vehicle, passes away from the leaves—very little water going down to the roots again. From this cause we have the reason why forests sent up very large amounts of moisture to the air. The quantity has not been properly estimated as yet ; we cannot get at it exactly, but we know that a large forest is calculated to send up what is called millions of tons of water to the atmosphere above in the shape of vapor. This vapor, being cool, as it necessarily is, being produced in the forest which is always cool, passes into the clouds above, and joining with them there, the clouds above bringing each a stock of rain from the southern regions, from the equator, the junction of the two naturally occasions precipitation and occasions rain nearer or farther away. Now the very opposite of this takes place on a sandy desert, or a country covered with mere plowed land—a country destitute of herb-

age—because the atmosphere drawn up from these—the evaporation—is drier than the clouds above, and instead of occasioning precipitation by joining with the clouds above, it occasions the opposite, and if there be a cloud above it would dissipate it and change it into the atmosphere so that the cloud would not be seen. That is the result of the fact that the air holds, when heated, a certain amount of water, which when cold it cannot hold. When the cold air from below rises to the heated air above, the heated air above containing moisture, that moisture must to a certain extent fall out, that is, as we are well aware, precipitation.

Now, I would like to suggest to you what I have observed in my summer journey this year to England and through the Highlands. We are all aware that in England the fields will give forth, in grass and grain, a far superior return to what they do in Canada. I was astonished in hearing the average of grain and noticing the average of grass produced by these English acres. It is something infinitely superior to ours. I passed through that country, going up and down through England and Scotland, and crossing the country again, till I should think I covered about two thousand miles in these examinations; and everywhere I found that that country, being subdivided principally by hedges, and here and there always having a quantity of trees interspersing, and every here and there also a plantation or a pleasant little bit of wood or copse—I found that wherever I passed through that country it may be said to be sheltered; and I take it that that shelter which they preserve there is the very thing which, joining their geographical position, gives them the large crops they enjoy.

I would give you my own experience to bear out this idea. Having been an old clearer of the forest myself for many years, and knowing many townships formerly with woods which are now in farms, I have invariably found that when we went to clear the forest the land was full of little rivers, springs, creeks—full of moisture. You could get water at two or three feet. Afterwards, when we had half cleared the forest, a good many small creeks had disappeared; you would have to go down fifteen, perhaps twenty feet, for water; and when we had cleared the township too much, or again, when leaving it to about one-tenth in wood, by that time I have known us have to go fifty or sixty feet for water; our little saw-mills had long stopped; and where we formerly had pleasant little creeks every here and there most of the summer, they were dry, sun-baked and muddy.

And then I will point out to you a remarkable thing which I have noticed in many parts, and which has a close bearing on our fruit-growing ideas, and that is, that when at the first commencement of clearing we could plant a tree anywhere and it would grow, but when we cleared a good deal of the township we found that we might plant a good many trees along the roadside, and the ground seemed hard, its natural power of growth was gone, and we would lose a good many out of the trees we planted alone, where as formerly we would certainly not have lost one.

In going throughout England and Scotland I went to three large forests—the Forest of Dean, the New Forest, and the Forest of Windsor. Now they are in England, where land is dear, where land is valuable, every corner; nevertheless they perpetuate these three large forests, having, as well as I remember, from 50,000 to 100,000 acres of forest in each. They will not cut them down. They are kept inviolable; and when you are in London, in the greatest metropolis in the world, surrounded on every side by noise of business and multiplicity of business affairs, you are nevertheless within two hours of forests—two hours travel by railway—where you may wander for days and never imagine that there was such a thing as a town, or such a thing as a farm.

We pass on to Scotland again. There I found immense forests covering the country in all directions, and I found that the great Scottish hills, great barren wildernesses and precipices, are being continually covered to-day with young trees by the forests they are there planting in all directions, until, as you pass along by railway, you see the great mountain side—which you could notice has been a mountain side bleak and barren for centuries—you will see half of that covered with beautiful young trees perhaps two or three feet high. You go on through and you will find that they are taking great care of their forests, perpetuating them in all directions; and they find profit in it.

Now, I would give my experience in the border counties. Passing through the old border counties, both on the English and immediately on the Scottish border, we see immense hills there, large fields, great valleys—very few farms, however; very few cattle; very few farm-houses—all apparently a barren wilderness; and the reason, one may very well see, is that long ago they have cut down the trees; you can see no trees there. When I was in the forest of Athole, talking to Mr. McGregor—he is the Duke's chief forester there—he told me he could well remember having been engaged in planting for the Duke this twenty or thirty years; that many of the pieces of land which he has planted were utterly barren. They grew nothing but heather, which was useless; but once he planted trees, and allowed them to grow for a few years, the heather was changed into grass, and plenty of good pasture existed where formerly nothing but black heather and barren rock was.

I went to Dr. Cleghorn, of St. Andrews, who was the chief forester of India for years. He gave me his Scottish experience. He says: "You must not suppose here that we grow timber because we can sell it. I can't sell my timber. I could go and buy cheaper at the saw-mill some timber brought from America. But I grow my trees and plant my forests because all the land adjacent there gives me a far better revenue, either for plowed land or for grazing land; because once it is sheltered, then vegetation begins."

Now, gentlemen, I compare that with the great stretches of land I pass through frequently in Canada, and I look over much of our country quite destitute of trees—a country where I once well remembered passing through a magnificent forest. I look over it all now, where I can hardly see a tree in sight, and I think that this is much the reason why we now gain such small crops compared to the magnificent ones we formerly had. I remember, myself, in clearing one township, when that township was not one quarter cleared certainly we sent double away to market which now that township does, when it is quite cleared, because there was then a richness in the soil.

Now I shall pass from that topic a moment and mention something which may suggest the value of planting trees. Considering the scarcity of wood now—and I can tell you from my communications with many furniture makers and wood workers throughout the country, I have every reason to believe that good timber—valuable timber—is getting very scarce in all directions throughout Ontario, and that we have not in the forests in the rear that valuable reserve of timber which we formerly had in the place where we stand and all surrounding us; it is not the same class of forest, and it will never give that class of timber. I am told by wood-workers that nothing in their idea, will pay so well as to plant some acres of valuable trees. If I were on a farm clear of its timber I should, the very first thing, plant a few acres across that farm, in a place where they would best shelter it, of good trees valuable for wood-working. Now, as you all know, those trees are expensive; but there is a variety which are cheap and easy to grow. I would take our own maple—of course, as you are aware, the hard maple for the dry land, the soft for the wet; and I would put four maple trees to every one of a more valuable nature for wood-working; and I would leave a good tree in the centre, so that I might plant just enough very shortly to shade the land, and then as the trees grew up I should cultivate them for two or three years probably—not more—and then as they grew up I should be able to cut out my maples and use them for fire-wood or anything I liked, and I would have my centre trees growing up for valuable timber.

A great wood-working firm down to the east wrote me that they would be willing to pay for a farm covered with hickory from six inches up, or even six inches in the stem, a greater amount than they would pay for a whole crop of several townships near it, because that wood can hardly be got anywhere.

People speak of planting walnut as if they could get it immediately; but that is a great mistake. There are other trees which they had better plant. Over in Illinois I saw a beautiful field of walnut, ten acres, forty years old. The owner considered it worth \$200,000, but said: "It is not worth a penny to cut now; look at what I am cutting;" and he showed me what he was thinning—logs perhaps twelve inches through,

but they were no good for walnut—they answered him very well for his bridges, his rough work about his farm. "You must wait," he said, "for twenty-five years more before you get large walnut trees that will give you the good boards you formerly got from the forest; for forty years it is all young wood; but when it gets to 60 or 65 years old then you get your great timber."

Now there is a sort of wood we can get in half that time—that is our own cherry, which will give us in thirty years a very good return.

There is a larch which I found largely planted in Scotland and England yields an excellent return; and for our shade trees, for our wind-breaks, I may mention that I have gone through all this country, and I find nothing better than the Norway spruce; but I would advise people to plant that around their orchards—not to attempt to cut it around too closely with their shears to make a hedge of it, because I have noticed it frequently turn brown and partially die. The spruce is really a tree, not a hedge plant; and when it grows big enough to want to be a tree it does not want to be a hedge any more. I should suggest that that distinction be always observed.

I may mention, before I close, some things that have been suggested at farmers' institutes should be done. In the first place, as we all know, we have immense pine forests. The great difficulty with these was that when the lumberman went in it was rather his interest to cut down this forest, because if he cut down the mature trees alone, he would leave a quantity of rubbish, which would catch fire and burn down the young trees which he would like to preserve. Now, those fires were preventible, and were caused largely by people with pipes, by camp fires, by careless sportsmen and by different methods sometimes but very seldom by lightning. Now, we have in the Province of Ontario—and I believe of all the States and Provinces of North America we are the only one that has done anything of the sort—we have in Ontario within the last two or three years got out a company of "fire rangers" throughout the summer months, when there is danger of fire. These men are paid half by the Province and half by the lumbermen; and wherever they see a smoke they travel towards it, put it out. If they find a camp that has left its fire, they put it out, follow up, and sometimes talk to the people; sometimes, where they are obliged to, prosecute them. They leave word in all the villages, "If you set fire carelessly you will be prosecuted." They speak to farmers and say, "When you are going to burn fallow we want you to take some precautions; we want you to warn your neighbors; we want you to tell us"—or something of that sort. So, gentlemen, we are taking much more care of fires than we did two or three years ago. It costs the Government some thousands of dollars yearly, and the lumbermen as much; but I see by this year's report that it is considered that last year alone they saved an immense amount of money, and I have no doubt they did; for in my wanderings through the forest I have seen small fires, which had been left by campers three weeks before, burning yet, and quite ready, when the wind sprang up, to involve the forest in ruin. Ontario has taken a great step in advance in this matter. (Applause.)

It has also been advised by some of the farmers that large nurseries be established, as in Europe—in Prussia especially—where they give away seeds and young trees of certain quality, and thereby encourage farmers to plant them. Of course it is always understood that reasonable bonds would have to be entered into, to take care of these trees, and plant them properly.

The third course that has been suggested is that the Government, in giving out wild lands, should always require that the hill slopes must be retained in forests. I was talking to Mr. George Allan, of the Canada Company, and he says that now in their deeds they always compel the settlers to retain ten acres in every hundred perpetually in forest; and I should like to observe that if that be done, a clause should necessarily be added that this be fenced, so that cattle be kept out; for if cattle be allowed to go into the forest they will certainly in time destroy it. They will bite down the young trees, and after that is done it is only a question of a short time when they old ones will cease to grow.

Other methods have been suggested, to the effect that Government should give away seeds and trees. That is not so effective here as on the borders of sea coast, where-

there are great expanses of sand. I have found them, however, growing great forests by simply scatterings seed over sand or over grass fields. But there is another course suggested, and that we have followed to a certain extent of late years—that is, that forestry literature, such as pamphlets, and letters in newspapers, should be promulgated throughout the country. That we have done for the last two or three years, and I think with very fair effect; so that I think we may say in forest preservation Ontario is as far in advance as any State or Province in North America; and in some points to a considerable extent ahead of them. That is a gratifying consideration for us.

I believe every reasonable and thinking man among us must believe that the great need of Ontario is to have some better system—some more energetic steps taken—to preserve some portions of forest, and to plant more trees here and there. Now, there is no better way for this than for individuals here and there to add their voice to it, both in public and in the newspapers, and to agitate a system which was suggested by a great philanthropist in the United States—"If you wish to improve the course of tree planting," he said, "I should advise to do one great thing, and that is, to plant some trees." I think we should all add our voices, our influence in the press, our efforts in every direction, to advance this great object for this country. There is nothing will give it more benefit. There is nothing will add more to its agricultural power, to its stock of beautiful moisture; and when I say that I may add—which means the same thing—that there is nothing will add more to its general wealth; for countries have been impoverished by this simple method of destroying the forest; and countries have been re-invested with their original wealth by the simple process of re-establishing the forest. That is the point I wish to press upon you to-day; and I have no doubt you will agree with me; and that I may depend upon your efforts to assist me in this great object. (Applause.)

The PRESIDENT—What kind of forest trees are most profitable to grow on waste places?

Mr. PHIPPS—The Conifera, that is, the pine in its varieties, the fir, etc. The pine, if tolerably cultivated, will grow mostly anywhere. Then our own maple grows very well anywhere—always putting the hard maple on dry land, and the soft on wet. Then the ash in many localities will grow very well, and is a very valuable wood too. Of all others I think I should prefer the pine, and I do not know anything better than our own white pine.

[Mr. Phipps had to leave at this point to catch his train.]

Mr. MORRIS—This matter is of greater importance to the country at present than fruit growing, and this society should take more interest in it. Hickory is so difficult to transplant that it could not be recommended for forestry. Norway spruce is a very nice tree for ornament, but not for forestry. The wild cherry is a much more profitable tree to grow than the black walnut. The timber is worth almost as much, while the tree grows much faster and is not so poisonous to the soil or other trees in the neighborhood as walnut. One of the most valuable trees is the Catalpa Speciosa; it is hardy; grows well in Minnesota, and for fencing or posts is almost equal to cedar for lasting. We have two acres of Catalpa; they have been out about six years and will measure six to eight inches in diameter now. For near lake Ontario or the Niagara district the Tulip tree is recommended. It is very valuable for carriage-makers—carriage boxes are made of it.

Mr. MORRIS—The Linden is also a very good tree. European larch is very rapid growing, and better for wind-breaks or posts than spruce. The maples are too slow growing to be valuable. Catalpa is something like the sweet chestnut—you can cut it down as often as you like and it will sprout up from the root again, which is a great advantage. Elm I don't consider valuable, not even white elm; I think these others are better.

Mr. CASTON—Pine is too slow-growing; it takes it half a century to make a smart saw log, and then it is very rough. They do not reproduce themselves. You don't find the young ones among the larger ones. In our section you can scarcely see a single pine.

We will soon have to import all the timber for buildings. They have struck into hemlock now, so that soon all the soft timber will be gone. Lumbermen strip the land, and don't pay taxes on it, and it has to be sold over again, and it brings very small returns. If the Government would take that land back again and make it Crown lands, and plant it with timber it would pay in the long run. Butternut grows rapidly, and gives a valuable timber for furniture. The Catalpa is hardy, and seems to flourish north.

Mr. MORDEN—I have a good deal of faith in tree planting for shelter, and I believe before many years we will be able to use good land to produce timber. I believe it has its effects on the streams. But here is a nut for Mr. Phipps to crack: In the summer of 1887, right through the centre of this continent, from the Gulf of Mexico to Algoma, we had a drouth extending for months in the temperate region that affected the crops very much. In the same summer, on the Atlantic seacoast and up the valley of the Mississippi, clear up to the North-West, where it is prairie for thousands of miles, we had abundance of rain. Now, if the forests are going to produce the rain, and if the prairies are going to banish the rain, how can we account for that? It sounds very well as a matter of theory, but I think it is a pretty large undertaking to make climate by planting trees. I think the chief benefit of the forests in this respect is their effect as wind-breaks. Would it not pay to plant cedar? They grow rapidly. It is not necessary to go to wet ground. They will grow nicely on dry ground. Cedar is a valuable timber, and I fancy before many years we will see it planted by the acre, as well as other varieties.

Prof. SAUNDERS—Mr. Beall, what has been your experience in growing walnuts from seeds as to the size they attain in ten years?

Mr. BEALL—I should say in ten years they would be from five to six inches in diameter, and 12 to 15 feet high; that is from measurement of mine. I have about fifty trees, about 21 years since they came up, and they are from ten to sixteen inches in diameter and from 30 to 40 feet high. The diameter is reckoned from about two and a half feet above the ground.

Mr. JAMES GOLDIE (Guelph)—Many parts of our country have been so denuded of the forests that it is suffering very much. The Government should be memorialized. When public land is sold there should be a reservation, either on each farm as it is sold off, or else reserve a portion of the public domain in small tracts through the country. That apparently, has never been taken into consideration by the Government.

Dr. BURGESS—I have seen walnut timber cut, said to be about thirty years' growth, which cabinetmakers pronounced very fair for use.

The SECRETARY—There is here a specimen of black walnut, sent by Hon. Mr. Joly, of Quebec. It is eight years from the nut. There are also some seedlings here, sent to us to show what size seedlings would grow in one year.

The PRESIDENT—Have we anyone here who has planted an experimental plot of forest trees?

Mr. MORRIS—We have planted about five acres in forestry, besides long lengths of strips around the borders, perhaps twenty feet wide. These strips are mixtures of trees, but the five acres contain Catalpa, American ash, and wild black cherry. I would recommend, in planting, that these trees be mixed, because the roots of some will go downward, while some will spread near the surface, and in that way they will occupy all the ground. Black cherry goes very well with black walnut. Trees are much more profitable than a farm crop would be if a person can wait ten or fifteen years.

Prof. SAUNDERS—Mr. Phipps has given us an admirable address, and in a very practical manner pointed out methods by which tree-planting may be encouraged. He went too far, however, in saying that it would take 60 to 70 years to get a crop of black walnut trees that would be merchantable. I saw a grove in Champagne, Ill., some years ago, which had been planted out twenty years ago, and they would go from 12 to 16 inches. I measured several, and I think they would have averaged 14 inches, taking them all around. I think if you add twenty years more to them they would be

merchantable. About 18 years since I planted some black walnut, butternut, and hickory, and the last time I saw them the walnut and butternut had made fully twice the growth in the same time that the hickory had. It took three or four years before the hickory seemed to do anything at all, and then the advancement was not at all rapid. They have a very long tap root, and they are exceedingly difficult to transplant and made to grow, even if you take them two years from seed. Last year in Ottawa we put out some 300 or 400 trees of that age, and I expect in the spring to find that at least two-thirds of them are dead. They were in a very doubtful state in the autumn. Yet the timber is very valuable, and we should not be easily discouraged, and if we could arrange to plant the nuts where the trees are to grow we could do a great deal better than by buying young seedlings and planting them out. The same remark would apply to the black walnut and butternut. Both of them we know to be valuable for timber, and also for the shelter they afford. We have had only two season's experience at Ottawa, but there are nuts that we planted the first season; I noticed quite a difference between those that were transplanted on the new plantation and those that were planted in the original plot. They are nearly double the size where they were left, not transplanted; and I feel certain that the trees that make so strong a start as they at the outset would make a much greater growth afterwards than we should anticipate when we see them at the end of two years. With regard to pines, the Scotch pine has impressed me more favorably as a tree likely to be useful as a timber tree for planting in this country than the white pine, for the reason that it seems to be a very rapid grower. I have had some Scotch pine out for 15 or 16 years, and they have certainly made a larger growth than the Norway spruce in the same time, and I think if I were planting a plantation, looking forward to the wood principally, I should expect to get better results from the Norway pine than from the spruce—better, probably, than the white pine. I think there is no doubt that forests have a great influence on rainfall, and also that they have a considerable influence in inducing local showers; and yet it is a point that is very difficult to prove, and such circumstances as Mr. Morden advances show that there is no rule without an exception, and there are a great many exceptions in regard to this question of forests inducing rainfall. However, I think we may take it as a well-established fact that land that is not influenced by trees—supposing the climate to be the same—does not, as a rule, get the same amount of rainfall that land will where it is adjacent to large bodies of wood. It is not fair to compare Ontario with the maritime provinces; for instance, on the Atlantic seaboard, where they have a large amount of evaporation from the ocean right at hand to give them an abundance of rainfall there. I would imagine they would have plenty of rainfall where they had trees around. The same is the case on the Pacific coast. There they have too much rain—almost every year too much rain, although they have their dry periods occasionally in the summer time, notwithstanding the enormous wood growth there is there. It shows it is a question it is not well to be too dogmatic about; and there is another aspect of that question of evaporation which Mr. Phipps did not touch, and that is the enormous evaporation that goes on from a field of growing crop. It would be a difficult question to answer how far the evaporation from growing crops should be held to counterbalance the evaporation from trees; but the question of shelter is a very important one, and I think that was very fairly put. Mr. Phipps said not to plant soft maples on high lands, but I have seen soft maples growing as fine on high, dry soils as in the wet soils. [A delegate—"Correct."] And although we commonly find the tree growing in wet lands, yet it stands transplanting on dry soil, and does very well. (Hear, hear.) And as a tree being particularly valuable for shelter I think we should not hesitate to plant it on high land. Indeed, for shelter, I think it would make better shelter in summer, and more of it than the sugar maples, because it is a more rapid grower, and especially as it would attract the winds more fully on account of its growing of a more bushy form, and not generally growing so high. At Ottawa we have accumulated about 100,000 forest trees, and these have been planted out, some in sheltered belts and some in plots. I was glad to hear that remark from Mr. Morris about planting mixed clumps rather than undertaking to grow any one particular kind of tree. That is the way with nature; you find ten or twelve different trees in one clump. Those who have tested forestry in different parts of the world find

that many varieties will grow better than a single variety. One reason is that some strike deep roots and some are shallow-rooted. Another reason—very important—is that all our forest trees are infected at times by insect enemies, and sometimes you have seen trees entirely stripped of their leaves. As a rule, the insects that feed on one tree do not feed on another. If you have a tree stripped in that position where it is sheltered by surrounding trees, it is not apt to be so much injured as if surrounded by trees stripped like itself; and in immunity from insects it is very important to have trees planted in mixed clumps. In Ottawa we have planted out across one end of the farm a number of clumps of trees, and it is proposed to continue it all across the end where we are planting the trees in clumps of one kind, a plan to which, as I have said, there are many objections; but on the other side we are planting mixed clumps, so that we shall be able to demonstrate what the difference actually is, or the advantage of one plan over another by taking the measurements of the trees and by having these living examples to show to farmers in the future. Having plenty of trees there, we shall be able to extend this forest planting in clumps and plots and hedges and belts in such a manner that in a few years we shall have some interesting objects to inspect. We have a farm at Indian Head, in the North-West Territories. There was not a tree or bush anywhere in sight when we took hold last spring. Twenty-thousand young forest trees, of some forty or fifty varieties, were sent up last spring, and were planted out, and most of them were doing well when I last heard. If any fail I do not think we should give up the growing of those particular trees that fail from one experiment like that, because you all know it is a great advantage in planting trees in the shelter of other trees; and in order to provide the conditions that are favorable for testing other trees, a large number of native trees are being grown on the same place from seed obtained last autumn of what is known as the Manitoba maple, the *Negunda aceroides*. From trees grown in Manitoba we raised something like 40,000 young trees, which will compare very favorably with this sample here of Catalpa one year old. The young trees would average a height of ten to twelve inches, and strong-rooted; and with a start there of about 40,000 trees upon the farm we hope in a few years to get sufficient shelter to give other trees a good chance. Besides that, we have found a nursery plantation near Brandon where there was a number of these same trees from six to eight feet high, and we secured about a thousand of those and planted them out so as to make a greater show in the near future, so that the monotony of the farm may be broken in on, and to provide shelter for these other trees to be tested. The same course will be taken on the farm in Brandon, which was begun last July. Then with a view to ascertaining how far the black walnut and butternut may be grown to advantage throughout the entire length of the Dominion, I am at present preparing for distribution of black walnuts and butternuts, somewhere about fifty bushels altogether, putting them up in small bags so that we can send those to some four or five hundred points in the Dominion, from Prince Edward Island to Vancouver, taking in the North-west Territories, and while it is not to be expected that these trees will succeed everywhere, yet we shall find, from the great diversities of climate, many localities where both will thrive. I was surprised to find the basswoods growing on the district of the Pembina mountains, a district they are not supposed to reach, and I also found them growing on the Riding mountains, a distance north of Winnipeg, and where basswood will succeed so well I don't see why butternut will not succeed, for it is supposed to be the hardiest.

Mr. MORRIS—Yes, considerably the hardiest.

Prof. SAUNDERS—We know the butternut succeeds in Lindsay, and in Nova Scotia a few weeks ago we found it. I hope in a few years we shall have some good reports from this distribution we are now preparing to send out. It is a very difficult thing to make much impression upon a subject so vast and important as this in a year or two, but if we can once satisfy the people on the North-west plains that trees can be grown to advantage, there is enough energy in the people themselves to buy out almost all of the seeds that can be had, and plant them out with a view to beautifying their homes and modifying the climate, giving that shelter around their farms which is so desirable. We must depend on the people themselves more than our Government help, for whatever

Government will enact in this matter, very little will result from it unless individuals put their shoulders to the wheel and help along the subject by planting trees, and planting them plentifully themselves. (Applause.)

Mr. WELD—Will young walnut trees succeed by cutting the top off? will they re-bud and form trees? and will the horse-chestnut?

Mr. MORRIS—The black walnut will sprout if it is not large, perhaps not over a couple of inches. I would say the same as to the horse-chestnut, while the latter are small, say up to an inch at the bottom, there are generally buds near the surface, or below the surface, that will sprout. Of course after they get large, and these buds disappear, they will not sprout.

Mr. J. M. PETTIT moved, seconded by Mr. A. D. LEE, That this Association do memorialize the Ontario Legislature, and urge upon them the necessity of enacting such laws as would encourage the protection of existing forests, and further assist farmers and others in planting shade trees and wind-breaks.

This resolution was carried unanimously.

FORESTRY IN INDIA.

The following paper was contributed by Mr. R. S. Dodds, Conservator of Forests in the territories of the Nizam of Hyderabad in India:—

For some years I held the appointment of Conservator of Forests in the territories of His Highness the Nizam of Hyderabad. Forest conservancy had been in existence about fifteen years previously, but the department had been presided over by native element entirely, and, partly on this account and partly from a grasping wish to realise an unduly large revenue, the system introduced was lax and unsatisfactory and the forests themselves were depleted to an alarming extent.

Apart from the destruction caused by the axe, each year many miles square of valuable forest land were devastated by fire, which every year crept in and which when once fairly alight, it was almost impossible to extinguish. These fires were sometimes the result of accident, but more frequently they were set going by the natives themselves so as to destroy the old dried-up grass and improve the village pasturage in the following year. The ashes of the burnt grass forming an excellent manure, and, stimulated by copious monsoon showers, bringing up a fresh succulent crop the following spring.

Besides the trees actually destroyed by fire, through the intense heat many others were gnarled and stunted in their growth, thus greatly lessening, if not totally destroying, their commercial value. In British India forest conservancy is carried to high perfection and although the working expenses are very high a large revenue over and above expenditure is realised each year from this source.

To minimise the loss from fire, in British India the more valuable forests are demarcated and are protected most carefully. All access on any pretext is forbidden, except of course to departmental subordinates; to check the ingress of fire a broad space a couple of hundred feet wide is cleared of undergrowth and all other combustible matter, right round the limits of this demarcated forest—this is called a “fire line.” To carry out this work, of course incurs considerable outlay, but it is found to pay.

By far the most useful and valuable timber in the forests of India is “Teak” (*Tectonia grandis*), but the demand for this has been so great that at the present day it is rare to find a tree of exceptionally large growth. I remember seeing a table made of a single teak slab 8 feet in diameter; such would now be simply un procurable.

The other valuable timber trees are the “Deodar” (cedar of Lebanon). The habitat of this is principally on the Himalayan range. It is called the oak of India, the “Sal” (*Shorea robusta*); “Satin-wood” (*Chloroxylon swietenia*), which gives a very ornamental wood; “Black-wood” (*Dalbergia latifolia*); “Ebony” tree (*Diospyrus melanoxylon*).

These two last work up into very handsome furniture, and the fruit of the last named is greatly eaten by natives ; "Unjun" (*Hardwickia binata*). The sap-wood of this is quite white but the heart, in a matured tree, is 8 to 10 inches in diameter, in color perfectly black and as hard as iron. The natives dislike cutting it down as it turns the edges of their axes. The "Dhamin" (*Grewia elastica*) : this is the lancewood of India and is very useful for gig-shafts, bows, etc.

Besides these there are the following economic trees, which are more useful for their products than for their timber : The "Babool" (*Acacia arabica*), which yields the firm, clear gum-arabic of commerce ; the "Kheir" (*Acacia catechu*), the bark of which gives a fast red dye and is used in tanning ; the "Bael" (*Egla marmelos*), which yields an apple-looking fruit, the pulp of which is invaluable as a never failing specific in bowel complaints ; the "Mhowa" (*Bassia latifolia*), the fruit of which is greedily eaten by the natives in times of scarcity, its principal use however is in the preparation of an intoxicating liquor ; the "Olibanum" (*Boswellia thurifera*), this yields plentifully a fragrant gum-resin much used by the people ; the "Kaweeet" (*Feronia elephantum*), fruit edible and slightly astringent ; the "Mango" (*Mangifera Indica*), when well cultured, this yields, in my opinion, the only fruit worth eating in India ; the "Serdi," or date palm, which supplies the "toddy" largely consumed all over India ; when fresh this toddy is harmless, but when fermented it is very intoxicating. By Europeans it is used instead of "barm" in bread-making. The "Tamarind," of which both the timber and fruit are much prized.

The two principal sacred trees of India are the Banyan and the Peepul ; the former has a wonderful manner of extending itself by dropping down roots from its branches which, entering the ground, take root, grow and in time throw out branches on their own account. I saw a single tree which was capable of sheltering a regiment of soldiers !

I must not omit to refer to that giant grass the "Bamboo," which is to be found slim and slender, when it is very useful for basket-making ; also growing to the height of 70 to 80 feet with a diameter of 8 to 10 inches. These last are used for making rafts, for building-scaffolding, and, when split in two, for roofing houses of the commoner sort. Of course these gigantic bamboos are hollow, otherwise when growing they could not support their own weight. As ducts for water for irrigation and other purposes these bamboos are also very useful. There is a small description of "male" bamboo (in contradistinction to the "female," which is hollow,) which rarely exceeds three inches in diameter. This is used almost exclusively for spear shafts, useful in warfare and also when hog-hunting.

In the State of Hyderabad it was the custom to lease out the inferior timber in the forests yearly to the highest bidder. This was done by the revenue authorities in whose charge this inferior timber remained, but the anomaly existed that the better descriptions of timber, *in the same forests*, were under the care of the Forest department. Thus each forest had two masters, which we have the best authority for knowing is not a good arrangement. Too often the lessor of the inferior timber took up his contract as a cloak to cover thefts of the better sort. The Forest department in Hyderabad sold all timber standing, the cost of cutting and carting away falling on the purchaser. In British India a different and a better system prevailed : Government established timber depots at different places through the forests and held periodical sales,

The most popular and successful sales of this description were of Sandal-wood, which grows to great perfection on the Western Ghauts. The fragrance of this wood is well known. In Bombay the best billets of it are used for ornamental carving into card cases, work boxes, glove boxes, etc., while the roots and the inferior sorts are readily bought by rich natives to be used when burning the dead bodies of their relatives.

One great drawback to successful forest conservancy in the independent native states of India is the great number of "jaghires" scattered over the country. These are grants of land which have been made over to certain individuals, in perpetuity, for various reasons ; it may have been for meritorious services to the state, or it may have been in condition that a certain number of armed men were properly equipped and maintained.

for the public service ; anyhow these "jaghires" are regular stumbling-blocks to progress; criminals take refuge in them, and while within the boundaries are free from arrest. Too often the officials are in league with thieves and grant certificates, falsely declaring that timber has been cut in private forests which really has been taken from government land.

As an effectual preventive of these malpractices I recommended His Highness' government to resume all forest land in the various jaghires, paying the owners by way of rental a sum annually, equal to the average of what had been realised in the ten years previously. They did not see, however, how to carry my suggestion into effect. The times were not ripe for such a *boulversement*. To do their duty thoroughly forest officers should be on tour eight months out of the twelve. Their duties take them into most dismal and deserted parts of the country, where the only living creatures met with were the denizens of the forest—wild beasts, and small tribes of people (Bheels, Gonds, etc.), in intellectual capacity only one degree higher. When the forester is a sportsman this loneliness is amply compensated for by the splendid shooting to be got—comprising all animals from the lordly tiger to the graceful gazelle. I cannot conclude this paper without paying a tribute of praise to His Highness the Nizam of Hyderabad and his government. His Highness has acquired a knowledge of English, and having been brought up under European tutelage has a taste for manly sports. He is quite an expert at driving a four-in-hand. In the administration of his country he has gathered round him men of genius and talent, conspicuous among whom is Nawab Moksin-al-mulk, and it is His Highness' earnest wish that all details of government should be assimilated as closely as possible to the English model. We know that imitation is the sincerest form of flattery. As Conservator of Forests he has now got a European, lent to him by the British Government, and who was specially selected on account of his industry and his superior knowledge of those details which go to the successful working of the Forest department. Improvements have been introduced but still much remains to be done, and it is only a question of time when the forests of the Hyderabad state will be on as satisfactory a footing as in any other province in India.

APPLE GROWING AND EXPORTATION.

Q.—Is apple-growing profitable? Does it pay to export our apples? What are the drawbacks to exportation? And as regards transportation of fruits to home and foreign markets, what complaints have we to make against the railway, express and steamboat companies?

Mr. P. C. DEMPSEY—I fail to see why the prospect for apple growing is less bright than it was fifty years ago. Nearly fifty years ago my first marketing of apples was at five cents a bushel—and we thought the price very remunerative. It was mostly common fruit, and I have repeatedly gathered fifty bushels from a tree. To-day, upon the same soil, there is growing a finer quality of apple, and people seem to think if they only get a dollar a barrel—forty cents a bushel—they are doing nothing. If people could afford to grow apples at five cents fifty years ago, I fail to see why they are not profitable to-day at forty cents a bushel. The trouble is with ourselves. We make mistakes in selecting varieties. Apples can be grown at a profit for ten cents a bushel, if they are properly cultivated and productive varieties cultivated, and will pay better than any farm property, if they can be grown even at those low rates. Our submitting to low prices is our own fault. I have seen good varieties of apples, well sorted and well packed, in Ottawa in October, sold at \$3 a barrel. I saw at the same time the same varieties of apples, that had been badly handled, badly sorted and badly packed, only bringing \$1 a barrel. It is only a question of profit and loss, whether it would pay us to properly select our fruit, pack and ship nothing but the best. Again, by our selecting just the best, and sending no other to the market, we not only make a good profit, but we are constantly increasing the demand. I find, too, that the reputation of one person, spoils

the reputation of an entire neighborhood. I will give you an actual fact, that I saw in Ottawa this winter. A gentleman was looking at some apples. He said—accompanying his remarks with some rather rough language—"There's the greatest set of schemers in the Niagara district that there is in the known world!" (Hear, hear, and laughter.) Well, I wanted to know why. He replied, "Well, here were men employed at \$1.50 a day to pick and pack apples; they have no reason to defraud at all; and I want to show you a lot of Kings I have got." He opened a barrel of Kings. I said: "My dear sir, you have no reason to complain." He said: "See there! out of a carload, that is the first one I have found that was a King." He opened that; what was that? It was a cull! He opened another; that was a cull—Rhode Island Greening—never been hand-picked either, and very well seasoned with worms. He opened another; it was Roxborough Russet. And he never found another barrel of Kings in the lot? That man was disgusted with the stock. He had been defrauded, and he was laying it on the whole Niagara district. I saw another man in the fall. I had some pears then I was selling. This fellow was a good natured Frenchman. He asked me where I was from. I told him "Prince Edward." "Well," says he, "In the County of Prince Edward, they are the greatest set of schemers that I ever saw." Well, it was quite a compliment, and he went on to show me where he was defrauded, and how he was defrauded, by some man from Prince Edward who had been packing fruit for him. I felt that upon a man who would perpetrate a fraud like that we could hardly inflict a remedy as severe as he deserved. Now, I know some parties that have realised some good results from their honest labor in years past. The lowest I have known one of them to sell their fruit at, even in the fall was \$1.75 to \$2.50 a barrel, delivered at the railway station. I fail to see why we can't all be honest in the packing of our fruit. (Hear, hear.) If we will all look well after the packing and selecting of our own fruits ourselves, and not trust to a man that is liable to be fixed with a little whiskey or cider, or something of this sort, I fancy we will find some day that apple culture is more profitable than it has been this year. As to the over-production this year, I was reading a speech the other day by Mr. Barry, in which he says we have not had such an over-production for over twenty past; that it only occurs in about once in twenty years. If that is the case we have nothing to fear. Men in our section submit to a poor crop of barley nearly every year, and still go right on with their barley; and some of those same men I find digging up their apple orchards this year, because they have not made it pay.

The SECRETARY—I don't think we would find much profit in apples at ten cents a bushel. When we count the expense of gathering, and of barrels and packing, we find even at the prices that we are averaging of late years, there are no very immense profits to speak of. I think we need a little caution in this matter. I think we have been in the past speaking rather too highly of the profits of our business. We need a little moderation on this subject.

Mr. DEMPSEY—I would ask the Secretary if he thinks that common varieties of apples would not pay the producer at ten cents a bushel, to manufacture into cider? It is not a question of profits that I was talking about, or large profits. The finer varieties of apples we cannot produce in such abundant crops. We cannot get forty or fifty bushels for example, from a single tree.

The SECRETARY—I don't think it would pay to plant an apple orchard, and wait ten or fifteen years for a crop, and then sell the crop, even for cider at ten cents a bushel. Of course if a man has an orchard and gets a very heavy bearing, it might pay him to take ten cents, rather than cut down the orchard.

Mr. GEO. E. FISHER (Burlington)—Is it allowable to put an apple having a worm hole in, no matter how small, or whether it be in the blossom end, or where it is?

The SECRETARY—As No. 1 fruit I don't think it is.

A DELEGATE—Do you ship wormy apples at all?

The SECRETARY—No, not as No. 1 fruit. I have shipped them as No. 2. I always very carefully, and after a good deal of expense, separate all the apples that I ship into

three grades. I make a class of "extras," that are large and highly colored. I mark them "extra selected," or XXXXX, that is my best grade. I do that with great care. I have a large packing table, and the apples are emptied out on it. I then have one person selecting out these "extra selected" apples, which are put up in barrels by themselves. Then all the sound ordinary medium sized apples, that are free from scabs, or specks or worm holes—perfect apples, are packed carefully, and marked No. 1 grade. The third class is one I seldom ship. I am able generally to dispose of these in some other way—either by evaporating, or trading them off with farmers who do not grow fruit, for ashes or fertilisers that I can use upon the orchard. But upon some occasions I have put up a third grade of apples to ship. I always very carefully mark them upon the head as second-class apples. All the fruit I ship I mark with my own name, and the grade, upon the head of the barrel.

Mr. DEMPSEY—Don't you think it would be better for us if we never shipped No. 2 apples?

The SECRETARY—Of course it helps to fill up the market. In that way it is not profitable; but I shipped No. 2 apples to Montreal a year ago this fall, and had them sold there—a car load—for \$1.90 a barrel; and it is rather a temptation to ship them when you can get that money for them. Of course knotty, misshapen ones were not included in the No. 2. These are kept for stock feeding. I have never shipped mixed apples—never put a poor grade in the centre of the barrel—and I hope it is not the habit of any of the members of our association to do that.

Mr. FISHER—The explanation is very satisfactory to me; I am much obliged to you for it.

Mr. T. H. RACE—The first thing to do is to educate the farmers up to growing only a few varieties that will stand shipping, and a sufficient quantity of those varieties to encourage buyers to go in. Then you want to encourage farmers to believe that if they will do this, there will be a market at paying prices. The city papers deal very little with this fruit question. The Government should help this association more, so that it would be able to reach the farmers more fully and educate them on this question.

The PRESIDENT—A commissioner has gone to Britain to look into the question of their methods of handling fruit, making returns, etc. One of the largest and oldest houses in Liverpool has been perpetrating upon shippers what appears from the evidence we have to be a perfect fraud. There is also a case of the same sort in Glasgow. I am satisfied that their method of handling fruit stands as much against the interests of fruit growers in this country as anything I know of. The brokers there receive cargoes and sell immediately, without regard to market, or the division or selection of those fruits from that cargo for special markets. We have discovered also that they make false returns. A great many of those firms have pamphlets or lists published, giving sales. We have taken the precaution of employing persons to attend those sales, taking a note of the buyers of various cargoes, and the prices they buy at. On one cargo alone we find there is a shortage of a little over \$2,000 as between the actual amount the fruit was sold at and the return made by the firm to the shipper. It is a very great evil, and it is a question how to overcome it. One method is to make it known over there that we know it, then we will alarm the markets there to a certain extent; and as they are bound to get our fruit—for they want it, and must have our apples even if they pay a higher price than they pay any other country—then we will find that parties will come here and buy our fruit, were we can see that we are not imposed upon. Another evil is the freight rate on fruit; it is too high. It is a clean freight, and one that all railways and steamship companies desire. The present rate averages about the value of the fruit as we buy it. When you come to add that to the purchase price it makes the fruit expensive as landed over there. Yet it is difficult to know how to remedy this. It is a pretty hard thing to approach the railway and steamship companies under their present laws. We have tried to get reductions, but they absolutely refuse, on the ground that there is a law governing their rates. However, we know that they do break the law.

Mr. A. H. PETTIT—If we could get our markets in the Old Country in such a position that we could get confidence in the handling of them there, then our growers would become packers and shippers, and handle our fruits in the proper season. There is no preparation for the apple season—no arrangement for handling them, and in a season like the last one, this is a very serious mistake. The shippers are certainly to blame for being behind hand and shipping their fruit when it should be in the cellar, and having such large quantities frozen in transportation. If our attention were devoted to picking, packing and handling and shipping our apples, instead of discussing varieties, it would be more profitable to apple growers.

The PRESIDENT—I always received the top market price—and sometimes considerably over—in being careful as to the purchase of my apples, in this way: I paid in proportion to the method that the grower adopted in producing the apples. Where I found that the grower took a great deal of care with his orchard—fine, clean, healthy trees, not overloaded with fruit and therefore good samples, the soil in good heart, and all these circumstances perfect—or as nearly perfect as we could find them—I always gave that man the highest possible price I could afford. Thus, if I was paying \$1 a barrel for Baldwins in an ordinary orchard, I would pay for the like of that \$1.25 a barrel. I found it paid to do so.

Mr. T. H. RACE—I am to speak on fruit-growing before one or two farmers' institutes within the next four or five weeks. Could I go before them with the authority of this association and tell them that there will be a probability anywhere within the near future that a market will be opened up for Canadian fruits whereby the farmer can sell his fruit at a paying price to himself?

The PRESIDENT—I would not like to say that altogether. If we could only adopt some scale by which the grower would be responsible for the selection and packing of that fruit, there is no reason whatever why the grower himself should not forward that fruit into the market. I don't care how that market may be glutted. Take this year, at the time it was glutted the most you would find an odd parcel now and then drawing a high price. You found, even at the worst season of the year, that fine, well-selected samples brought a good price. Everything depends on that. The trouble that shippers have had is that when they go into the orchards the grower is so anxious to get rid of every individual apple he has there that he uses his influence to force off all the fruit he can possibly get rid of from that orchard; and a packer that is not thoroughly well posted, and working on a straight rule will be induced to take them. We must make both grower and packer responsible, and their remuneration must depend upon that responsibility.

Mr. PETTIT—if our apples could be packed by each grower and shipped and sold at a price subject to the buyers' inspection at the wharf at Montreal, then, being properly tried and found properly packed, there should be no risk in the handling of them further forward. If the buyer sees them on board the ship there is no risk to undergo. This plan would give us a satisfactory way of handling our fruit.

The PRESIDENT—I am satisfied it is quite possible. I know, from conversation and dealings with them, that there is a certain class of dealers from Britain that would prefer buying that way.

Mr. CASTON—if the facilities and steamers were all right it would do to have an inspection at Montreal; if not, it would be necessary to have the inspection on the other side. As to educating the farmers, the trouble is they don't come to our meetings or subscribe for our journal.

Mr. DEMPSEY—the way to educate the farmers is to reach their pockets, by the buyer refusing all varieties except such as the market requires. If the buyers could be induced to buy and pack nothing else but the very best varieties for shipping, the demand for our apples would increase so that half the quantity would fetch more money than the whole.

Mr. RICE (Port Huron, Mich.)—I attended the Western New York Horticultural Society, and heard the statement that Canadian apples brought more in foreign markets

than western New York apples. As western New York was always said to be ahead of the world, you may consider that you Canadians stand at the head of the world. (Hear, hear). Further, it was stated, on the authority of that society, that western New York buyers marked their apples, in shipping to Europe, "Canadian apples." (Hear, hear). That is a fraud that might be avoided by putting your names, your town, and everything on the head of the barrels.

Mr. J. M. DENTON (London)—The Zavitz family in Lobo have planted out 2,000 apple trees, and are going to plant out 2,000 more; and they hold that if they can get 25 cents a bag for their apples it will pay better than growing cereals. The English people will pay the price for an honest article, and I believe they would rather send their buyers here than run the risk of being deceived at Liverpool.

Mr. PATTERSON (Grimsby)—As a rule the barrels are very carelessly treated by the growers. They are left in the orchards exposed to frost and rain and sun, and they can't stand as well as those kept under cover. Shippers have told me that barrels that had been kept under cover reached England in much better condition, with fewer slacks, than those apparently packed in the same manner sent at a later period. I divide my apples into three grades. No. 1 I ship myself, or sell to shippers. No. 2 I generally sell on the Hamilton market. No. 3 I feed to stock for fattening, or to milch cows. From experience in the last three years I cannot find that there is any difference between a bushel of apples fed to steers, and a bushel of turnips.

Mr. ED. SMITH (Winona), asked : Do you have any diameter as to Baldwins you pack ? also, is it correct that in England they are finding out they can grow apples of as good quality as ours ?

The PRESIDENT replied that the article referred to on English apples had been admitted to be a mistake. In the newspaper correspondence, apple growers in Kent, England, had admitted that they had given up growing varieties they formerly had grown largely, because Canadians grew the same varieties to a much higher degree of excellence. (Hear, hear). And after using every method in growing that they possibly could think of, and doing justice to their orchards in every way, they could not produce the fruit equal to ours. As to the quality of fruit, we judge by the quality of flavor very largely. An apple grown farther north has greater points of merit than the same variety grown farther south. The farther north you can grow an apple, the better it will be in points of merit, especially in quality. That is why Canadian fruit stands about three shillings a barrel higher than American in the English market, on clear points of merit. Our fruit arrives at English ports in much better condition than American fruit, notwithstanding bad packing and all that, because its intrinsic points of merit are much higher. It carries better ; it keeps longer in that climate than the American fruit.

Mr. PETTIT—There is a little difference in the size of the barrel ?

The PRESIDENT—Yes ; I am more and more in favor of a smaller package than we have had ; and while I believe in a half barrel I am not altogether satisfied with it. I believe the day is coming when we will have something, perhaps not quite as large as the full barrel, that can be handled easier. I will acknowledge this, if you take a large lot of fruit of one grade, so many in ordinary size barrels and so many in half barrels, lay them open in the usual way that they exhibit them at the fruit markets, and you will at once decide, by a casual observation, that the fruit in the half barrel is certainly one grade higher than the other. It is simply the size of the package has deceived you—nothing else ; and that may account to some extent for the fact that we get higher prices for smaller packages—but only to some extent.

The SECRETARY asked whether our apples were carefully inspected in England by dealers before purchasing ?

The PRESIDENT—The method in all the markets is very much the same. They will select out a few barrels of each variety in the cargo and they will open the tops, and sometimes, if they are suspicious in any way, they will dig down a little way. If they are

still suspicious they will close that up and open the other end. If they are still more suspicious, they will turn that out into a large basket or sack and see what the quality is all through. But they always exhibit some and allow buyers to go and handle them, dig down and see what the character is. The character of a shipper is soon found out. You will always notice the buyers going around with their note books, taking note of the brands ; and you will see buyers that will pay so much just to buy that brand right out. They will take that at sight. They will not require the agent to open that out. This shows the necessity of placing your brand on every barrel, and being very careful that your brand is correct. If you are perfectly honest and careful in that, I do not care how that market is quoted, you will get a price that will pay for apples that are shipped in good order.

Mr. SMITH repeated his question as to standard size of Baldwins.

The PRESIDENT—I would place, as No. 1 of the Baldwins, the largest apples, high-colored and perfectly clean, without spot or a worm hole. You will find on the inside of the tree large Baldwins that are not high-colored. If you pick those at the proper season and let them lie on the ground for a certain time they may gain color and become No. 1, otherwise they are No. 2. Each apple should be handled in order to get No. 1, and it certainly pays for the time of selection to select and grade your fruit. You will find a difference in price between a select and a mixed brand which will pay admirably.

Mr. SMITH—Where seven-eighths of the orchard are under size you would mark those "No. 2?"

The PRESIDENT.—Not necessarily No. 2. You can select some mark by which they will know them. I used to select small fruit and mark them as "XXX Dessert," and they were taken very well that way ; they liked them, and I have often received a better price for my "XXX Dessert" than for my "XXXX Green."

The convention adjourned at six o'clock.

EXPERIENCE WITH THE FUNGUS FUSICLADIUM.

Mr. J. K. McMICHAEL, Waterford, read the following paper on this subject :

In the spring of 1873 we planted a pear orchard, consisting of 100 Bartletts, 25 Flemish Beauties, 6 each of Osband's Summer, Sheldon, Buffum, Belle Lucrative, Clapp's Favorite ; 4 of Belle D'Anjou and 2 of Seckel. The trees were remarkably thrifty, and it required a great deal of pruning to keep them in a proper shape. The fruit was all that could be expected, being large and well developed. A number of the trees suffered severely with the fire blight, but the orchard in general was prospering until the spring of 1881 when it was attacked by this fungus. This disease apparently commenced at the east end of the orchard on the Flemish Beauties, entirely destroying the fruit for the season, and for the five following years there was not a perfect sample of fruit on any of the trees. Upon the Bartletts the first year the malady was not quite so fatal to the fruit, but each succeeding year it grew worse until, in beholding the orchard you would be reminded of a lot of neglected natural fruit apple trees which had been left in the soil for fifty years. All of the other varieties were more or less affected. We experimented with ashes, sulphur, copperas, an emulsion of soap, balsam and kerosene, etc., but none of these remedies were satisfactory. In the spring of 1887, as soon as the buds began to swell, we applied hypo-sulphite of soda and repeated the application every two weeks until the fruit was about half grown. The sulphite was prepared by pouring it in a large kettle of hot water to dissolve and then diluted with ten gallons of water to one pound of the sulphite and showered on the trees with a force pump, hose and spray. The fall of 1887 the Flemish Beauties were fine and well developed and free from scab. The Bartlett trees made a fair growth and had on a small crop of fruit free from scab. Last spring we applied the sulphite as the buds commenced to develop and then did n

give another application until the fruit was nearly as large as hickory nuts. At that time the fungus was well developed on about half of the fruit, but was not very noticeable on the leaves. We immediately gave a heavy showering of the sulphite and another in a week. Apparently there was no further development of the disease and we picked a large crop of fruit, about half of which was a fair sample of first-class fruit.

The SECRETARY—I have used the same formula viz: One pound of hyposulphite of soda to ten gallons of water; but both the two years in which I applied it to my Early Harvest apple trees the fruit was mostly clean whether sprayed or not.

Mr. DEMPSEY (Trenton)—Two years ago we were bothered with fungus spots on our pears, but last year it failed to make an appearance.

Mr. McMICHAEL—For six years in succession the fungus was very bad each year on the Flemish Beauties especially. I put the solution on at the beginning of the season, then I did not put it on for six or seven weeks, then I applied it very strong, so that the leaves were browning up with it, and I did not see any further development of it that year; but other years the fungus went on growing till the leaves and fruit were spoiled.

The SECRETARY—Mr. F. L. Scribner has a most exhaustive article on the fusicladium in one of the last reports of the Department of Agriculture at Washington, and he proposes a copper solution as a remedy. He thinks that eau celeste would be even more effective than hyposulphite of soda. We should begin applying it before ever the buds begin to develop. The spores, it seems, remain alive through the winter upon even the scales of the buds, and upon the young wood; and in order to prevent its appearance on the fruit, the apple-tree should be sprayed early in the spring before the leaves have developed at all—the first application should be made then. Then, again, when the fruit is quite small; when the very first beginnings of the fungus spot are observable.

Mr. MORTON (Wingham)—Hyposulphite will act on a fungus that grows on the human skin when no other sulphite that I know of will affect it.

Mr. DEMPSEY—I find it is very little use to apply any remedy if the fruit has got the size of an ordinary thimble.

Mr. GEO. E. FISHER (Freeman)—How can you account for an orchard of thrifty trees on very good land being attacked by this fungus while other orchards escape wholly? We had that occur in our neighborhood.

Mr. DEMPSEY—I have seen that in my orchard this year.

Mr. MORTON—Would a remedy that would kill one fungus kill others?

Mr. DEMPSEY—Said he had found sulphate of iron effectual when applied early.

Prof. SAUNDERS—Both these substances are antiseptics, and would destroy the life of all those very low forms of vegetation which are known as fungus growths. Sulphate of iron is not as effectual as sulphate of copper on the grape fungus. If a solution of hyposulphite of soda answers every purpose, I think it is a little cheaper than the sulphate of copper, and it is not poisonous or injurious in any way. There would not be any taste from its use at all—in fact it is decomposed to a large extent by the action of the sun, and the sulphurous acid is eliminated during the process, and that is the reason it is effectual.

MARKETING FRUITS.

Q. Is it not time for the Fruit Growers' Association of Ontario to take up the question of marketing our fruits? Would it be wise to have a fruit inspector appointed, or what means could be adopted to induce growers to put up good, straight, honest packages of fruit? Could not the members of this Association act unitedly in marketing fruit through its own agents, instead of dealing with commission men, who often make more than the growers?

Mr. DEMPSEY—If you have a good article, go with it yourself, and sell it yourself, and then you will know you have got all that the fruit brought.

Mr. E. D. SMITH (Winona)—Even if we wish we cannot avoid supporting the commission men, for they have the market in their own hands, and it is impossible for the grower to go there himself or to send some one there to do it for him. The only practical way now is to not encourage commission merchants in those places where they are not already established. In New York they are passing a law that each commission man must report to the man for whom he sells the fruit, as a check on the honesty of the commission man. We want to get into the habit of handling our fruit at both ends of the string.

Mr. DEMPSEY—Growers might send one of themselves to attend to the selling. I have gone into markets a total stranger and sold fruit just as well as the commission men. They will try to boycott us at first, but almost invariably they will come out at the worst end.

Mr. MORDEN (Niagara Falls)—Fruit growers make a mistake when they patronise men that speculate in fruit, or retail it. A large proportion of those commission men are absolutely without any commercial rating. If we could know the rating of these men, and then ship only to reliable men we should meet with less disaster.

The SECRETARY—The difficulty is to find men who are purely commission men. I have dealt with some who represented themselves as such, but when the temptation came they would buy for themselves. I shipped fifty barrels of Bartletts to Montreal once when prices were \$8 and \$10 a barrel; and after waiting a long, long time I got returns at \$2 and \$3 a barrel. It is very evident that they had been held over until the market had been eased—until these commission men had sold the stock they had purchased. In shipping to cities we should select some one house and ship continuously to it; because if we ship to many we have our own fruit bidding against itself; and I think one house regularly patronised will look more closely to our interests, than if we shipped to several.

The PRESIDENT—The matter can be settled in markets near at hand by sending a man to watch over the circumstances and look after the commercial standing of the different firms. In England some of the commission men are actually partners in business with fruit dealers, and our agent actually stands there selling our fruit to his own partners. He may be in silent partnership with half a dozen firms; he may be selling our fruit to himself. They will try to boycott any man the fruit growers send. In Covent Garden they tried to boycott me, and wrote me down in newspapers in every way. But still a man with some sharpness and persistence about him, going in there, will succeed in spite of all that, and they are afraid of any one breaking up their system of the commission man selling to the wholesale dealer, and he to the retailer, and he to the consumer. That system has been broken through pretty well now; but no doubt it worked ruin to our profits—there had to be too many profits before reaching the consumer. I believe that proper men, going over there and persisting and selling in the face of the commission men, would tend to break that system down one way or the other. I tried to break it down for the purpose of compelling these men to buy our fruit here free on board, so that we would be face to face and know how to deal; and it would pay us better, I consider, to sell on a small margin here, so that we would know where we stood, rather than run the risks such as they are now.

Mr. E. D. SMITH—Is it possible for a good man to go to the Old Country a month or two in advance of the season and take orders for apples?

The PRESIDENT—I sold cargoes in advance to a man I had known years before, at 32 shillings, guaranteed brands; but except in isolated cases I found it a very difficult thing to do that. They wanted to see the fruit first. They were suspicious. It was all very well to guarantee the brand, but they would rather see it. We might be very honest, but they wanted to look after us a little.

Mr. GOLDIE (Guelph)—Is fruit all cash when you sell there?

The PRESIDENT—It is all cash to the shipper; but they sell on credit to some extent. Of course we lose on that. The commission men who sell our cargoes give a month to three months' credit. That is a point against us again. We should try and pass by some of these middlemen. Where I made the best sales I made them direct to the retail dealers. I had no trouble in large cities in selling direct to the retail dealer 500 and 1,000 barrels; and if I dealt fairly with him on one cargo, and gave him a brand that came up to the representation, I was perfectly prepared to sell to him again. That is why I impress on you to establish a brand and be particularly careful that you are never under that brand. Let it be a little better than your representations, if possible, but never under. Once they have established confidence in you they will buy here free on board; they are willing to trust you then because they have tested you.

Mr. A. ALEXANDER (Hamilton)—In a conference of fruit growers held in Crystal Palace, London, last September, this point was taken by Mr. Rivers—son of the celebrated Mr. Rivers—that the fruit should be graded in three classes: choice, fine and ordinary. They referred to the brands on butter, and the confidence they gave dealers at a distance in ordering. The members of this association should come to some understanding about this matter of branding. The dealers and merchants who sell the fruit will then know exactly what they are getting when they order, and by the publishing of fruit lists and prices they know exactly what the prices are. Then, would it not be possible for our fruit growers to have some co-operative agency in one or two of the principal centres in Britain where this fruit might be sent, with this brand upon it—put under the supervision of an inspector appointed for the purpose? The fruit-growing interest of Ontario is of sufficient importance for this association, even if they asked Government aid for it, to have three or four inspectors to brand fruit as marked by the growers. At a conference held in Cheswick in connection with the Royal Horticultural Society nearly all came to the same conclusion in reference to this matter of fruit. As to farmers growing too many varieties, they suggested that the farmers or growers should combine and furnish the same kind of apple, so that it would be worth while for buyers to go into the district and buy. Let every grower be his own inspector, like Mr. Woolverton, until others are appointed, and brand their fruit so as to inspire confidence of British buyers.

Mr. DEMPSEY—We never need fear English competition, because the varieties of apples they are compelled to grow in their orchards are, strictly speaking, the most hardy varieties, and generally the variety that is inferior in quality, and they calculate on Covent Garden market about a shilling a bushel. The high prices—eight to ten shillings—are generally for apples grown in gentlemen's gardens by their gardeners. I have seen English apples sold for one shilling a bushel, and ours right beside them selling for 21 shillings a barrel. The English buyers admit the great superiority of our fruit over theirs.

Mr. SAMUEL BRIGGS (Hamilton)—I was over in England at the time of the Colonial Exhibition, and I don't think the English people were more astonished at anything that we showed than the fruit. Mr. White, of Covent Garden, a commission agent, told me: "I must tell you one thing, that you Canadians and Americans make a great mistake in sending fruit over here sometimes. We can't depend on it. Sometimes we get a good lot; sometimes we get a very inferior lot. If we could only impress on the shippers of Canada not to send anything over here but good, first class, A 1, we could always get good prices for it, and there would be no difficulty in selling any quantity."

CHRYSANTHEMUM GROWING.

Mr. J. A. MORTON (Wingham) gave the following address:

In the absence of the gentleman whose name appears on the programme in connection with this subject, I feel constrained to make a few remarks; not that the subject will be better treated by me, but in the hope that in the relation of my experience and hints of use to those who may have attended this evening's session in the expecta-

tion of hearing something upon this topic may be gleaned. My experience has not been that of invariable success, and the "rocks upon which I have split" as well as the success that has attended my efforts I shall endeavor to point out, as what not to do is as essential to know as what to do. The matter will be treated from the standpoint of the amateur possessed of but few appliances for special propagation of plants, and the chrysanthemum of which I speak is the perennial sort, not the annual one.

Cuttings can be made from February till April—good healthy shoots about two inches long. Division of the roots is not so good; strike the cuttings in wet sand with a gentle bottom heat. For the purpose of striking cuttings of various plants I erected in the spring of 1888 a hot-bed greenhouse substantially according to the plan illustrated in the *Canadian Horticulturist* of 1888, page 52. We prefer, however, the building not so high; 3 feet 6 inches suits us better. Previous to building the hot-bed greenhouse, cuttings were struck in the dwelling house which answered very well. Care should be taken that the sand does not become dry. Just as soon as the cuttings have sent out roots of half an inch long, pot into 2-inch pots using ordinary potting soil. It is better to pot cuttings when roots are less than half an inch long than to leave them until they have grown much longer. To such as cannot be bothered with the preparation of the regulation potting soil, I would say use ordinary clay loam garden soil, mixing therewith one-third good well rotted manure, and one-third gritty sand; this makes a good substitute for potting soil. The after treatment of the young plants consists in pinching back the shoots to induce a branching habit of growth; you will find some varieties, such as the Japanese, are more inclined to an upright habit of growth than are others, such as the Chinese varieties. Never let the plants suffer from drouth, and shift into larger pots as their roots fill the ones they are in, not allowing them to become pot-bound. Pinching back should not be continued later than the middle of July. After that the plant should be allowed to prepare for the formation of its flower buds at will. Some plant out in the garden when danger of frost is past, taking the plants up in the fall. Others keep them growing in pots set out in the garden, and a third way is to keep them in the greenhouse throughout the summer. After a trial of all three ways, I use the last one, having better success that way than with either of the others. The principal objection I found to the first way is the check which the plants necessarily receive upon being taken up in the fall. The fault found to the second plan is the liability of the plants to dry out in the pots, even when bedded in the soil, and the black aphis is a much more troublesome pest, and more difficult to control when the plants are out of doors than when they are under cover. But whichever plan you adopt the plants should have plenty of sunlight. They enjoy it, and it is essential to their vigor and health. The aphis and allowing the plants to wilt for want of water were the causes of a failure of bloom one year. I had only four flowers from about a dozen plants, and none of those flowers would be exhibited at a chrysanthemum show. Not very encouraging that, was it? The plants must be taken under cover before there is any danger of frost. A low temperature approaching the freezing point will materially affect the flower buds. One year my plants were fine, noble specimens of vegetation, with many flower buds formed, and were a source of self-congratulation to me, but alas, through inattention to the temperature of one evening late in fall, or laziness, I am not sure which, these plants of promise, although under the light cover of a protecting shade, received a check from a light frost, with the result of many stunted and imperfect flowers. The plant itself will recover from a pretty hard freezing, but buds and bloom will not stand even a light frost.

To obtain extra large show flowers, pinch off all the buds but the terminal one on each shoot, and you will be surprised at the results if your plants are well fed. Manure water twice a week gives good effects. Cow manure is recommended in preference to either horse or fowl manure, as being safer to use; not so much danger of an overdose.

What varieties to grow will be left to your own judgment. There are now so many good ones in the plant catalogues of dealers, and so many of real merit being added each year, that you can hardly go astray in an intelligent selection.

If the flowers are cut as they are fully expanded, or a little before, they can be kept in water in a cool place three weeks or more, which is much longer than they would remain in perfection if left on the plant.

The only insect pest which is troublesome is the aphis. Tobacco smoke is the most effective remedy. A handful or two of tobacco stems placed over live coals in some confined place where the infected plants are will do the business. Before my hot-bed greenhouse was built, I used a very large packing case as a smoke house. By papering inside, and with a close fitting lid it was made smoke tight. In this the plants were placed, and through a small hole in the top enough smoke could be blown through the stem of a tobacco pipe—the reverse way in which smoking is usually practised—to destroy the enemy. Leave the plants there two or three hours before removing them.

If any of you ladies do not smoke, and cannot get some one to do it for you as directed, use in the same manner, instead of tobacco smoke, pyrethrum powder, or better still, Bubach, blown in by a small powder gun such as is in common use. Syringing with strong tobacco water is also effective, and I have used coal oil emulsion with advantage. Other insect destroyers could be mentioned, but I have mentioned enough for choice.

The parts pinched off in June, or even July, can be placed in a box of light rich soil, two inches apart each way; they will strike readily, and make fine individual bloom.

Mr. MORDEN—You can make a water solution from burned tobacco or Scotch snuff and apply it without the difficulty of the smoke in the room. Pyrethrum is also a good insecticide, but not so efficient in its action as tobacco smoke. The trouble with it is that it loses its efficacy by keeping.

Mr. MORTON—I tried Myrtle Navy smoking tobacco. I boiled it.

Prof. SAUNDERS—I am afraid you spoiled it. Nicotine is very volatile. There is one thing about tobacco water, and that is in distributing it over the whole plant. It does not permeate the plant as smoke does; but I believe if water is sufficiently strong and made from as good tobacco as you can get, and not boiled but infused, it would kill the insects as well as smoke. It should be applied in a spray.

WORDS OF GREETING.

The PRESIDENT introduced Sheriff McKellar, who greeted the association. He said he had been brought up on a farm, and had worked his way up till now he occupied the position of—hangman. (Laughter.) He was glad to see the importance of fruit and agriculture recognized by the appointment of a member of the Government to look after their interests. When he was in parliament he opposed the opening of the House in the fall, as it would interfere with the farmers fall plowing. He was laughed at throughout the country, but the point was carried. There are too many lawyers in the Legislature. He would like to see more farmers there.

GARDENS IN CITIES AND SMALL SPACES.

In the absence of Dr. W. O. Adams, of Toronto, who was to have given a paper on "What can be done with a city garden of say 20 feet square in producing supplies for a family?"

Mr. THOMAS BENGOUGH (Toronto), having been a near neighbor to Dr. Adams, told about his garden a few feet square, wherein the doctor grew squashes, pumpkins, grapes, tomatoes, lettuce, and other supplies. His vines were trained "up a tree" that grew in the yard, and the novel sight was shown of big yellow pumpkins among the branches of a poplar. The squashes were trained along the fence, and supports were nailed on when the vegetables grew large enough to require them. Dr. Adams had carried out suitable plans in his new premises, and two years ago grew sufficient in one season not only to furnish his family but to net about \$30 in addition.

Mr. DEMPSEY had seen a little spot where pumpkins were planted, which ran on a wood pile, and some of them weighed a hundred pounds. He himself had taken seventeen bushels of onions off seventeen feet square—a bushel from each foot. A man could take off twenty feet square a crop of lettuce, of radishes, of cucumbers, and a great many other things before the snow was off the ground, just by having some convenient glass and a stove. It is surprising how much could be grown off twenty feet square by the time you occupied the ground all the year.

Mr. MORDEN—You could get on a hundred acres about 10,000 pieces of such land. That will keep about 10,000 families and make \$3,000 besides. All that can be done in one year.

The PRESIDENT—There are many spots in cities—especially in front of the house—that might be beautified, and give the children an interest in growing plants. It would be very interesting for people engaged in commercial pursuits to indulge an hour now and then in a little spot of ground. They would be benefited in every way. There is something particularly refining in the cultivation of the soil for any purpose.

Mr. DEMPSEY—What I am worth to-day I made off three acres of my farm—and I have supported my family and lived pretty well, and paid some other folks' debts. I have seen on a small spot—I won't say it was 20 feet square—a crop of grapes carefully cultivated, something immense, on the east wall, and on the west wall the most magnificent apricots and peaches that I ever saw. You could nearly fill a peach basket at one scraping down—they were so thickly set on a tree that was trained against the wall. You can grow very nice pears against a southern wall with a northern exposure; and there are some fruits that will grow on a northern exposure. Then that leaves the whole of the ground free for the plants. I have sold four dozen peaches at ten cents each that were grown in a ten-inch pot. Now, figure out the inches if you like. (Laughter.)

Prof. SAUNDERS—I had a garden plot 66 by 110 feet, on which I put 120 fruit trees, and grape vines along the borders and around the fences, and strawberry vines about three feet from the grapes, bordering two paths, and I carried on that garden for 17 or 18 years, and in that time got an immense quantity of fruit off it. I might have realised a good deal more than \$30 a year from the pears I got from those trees. I began by planting them out about eight feet apart each way, and as the trees grew large if they did not die I had to cut them out here and there so as to make room. I have had as much as 1½ to 2 bushels of plums off these trees—had to prop them up in all directions. I can corroborate all that has been said about getting a great deal off a small piece of land. No matter how small the piece is, by a little ingenuity and management you can make it useful, and make it contribute to your comfort and happiness.

Mr. DENTON—It is true that many people make more money out of their gardens than other people do out of their farms.

Mr. RICE—in Rochester I noticed a Dutchman growing grapes up his house. The firm of Curtis Brothers, of Rochester, paid to a man \$81 for the fruit of two cherry trees in front of his house. The man paid \$1,000 for the lot with the trees on, and this \$81 constituted the last dollars of \$1,000 that the firm had paid to that man for the fruit off those two trees. (Applause.)

The meeting adjourned at 10:15 p.m.

SECOND DAY.

The SECRETARY read a letter from the honorable the Minister of Education, referring to resolution passed by this association at Ottawa respecting the study of horticulture in public schools :

HORTICULTURE IN PUBLIC SCHOOLS.

The Secretary read several letters, received since the last session, among which was the following from the Minister of Education :—

MY DEAR SIR.—I beg to acknowledge the receipt of a copy of certain resolutions adopted by the Directors of the Fruit Grower's Association of Ontario, respecting the study of Horticulture in our Public Schools. In the new text-book on Agriculture, which is in course of preparation by Principal Mills, of the Model Farm, I expect that the subject of Horticulture will be discussed, and as the book is intended for the Public Schools, the study of this subject will be systematically taken up throughout the Province. By means of "Arbor Day" established three years ago, we are cultivating native plants and ornamental trees in all the school grounds. From the reports received by my Department we have planted already 73,000 trees. I shall consider what is prudent to do in regard to the question respecting first class teachers.

Yours truly,

GEO. W. ROSS.

L. WOOLVERTON, Esq.,
Secretary Fruit Growers' Association, Grimsby.

THE RUSSIAN APRICOT.

Q.—Would some one give his experience in regard to the fruiting of the Russian apricot?

Mr. WELLINGTON—The apricot is one of the handsomest lawn trees that has ever been put out. It is perfectly hardy, as I know from experiment. Some of the seedlings that have been put out have borne good fruit. Nurserymen are offering some half dozen varieties that have been tested, and that really bear good fruit. One is named after Prof. Budd; and people who know him know that he would not countenance anything that was not reliable. You cannot depend on the seedlings any more than you can on the seedlings of any other fruit; but if a man does not get good fruit from a seedling apricot he has certainly got a very fine ornamental tree, and one that will stand this climate well.

WANT OF A TASTE FOR AND KNOWLEDGE OF HORTICULTURE AMONG FARMERS.

Mr. A. M. SMITH read the following paper :

MR. PRESIDENT AND GENTLEMEN.—One would naturally suppose that if there was one class above another that would be interested in horticulture and its pursuits it would be the tillers of the soil—our farmers—surrounded as they are by the beauties of nature, trees, plants, fruits and flowers; that these would be a constant study for them and that they would seek to develop them and bring out all of their beauty and utility. But I am sorry to say that any one familiar with Canadian farming will have to acknowledge that this is not the case—but that Canadian farmers as a rule (I know there are some honorable exceptions) are far behind our professional men and even our tradesmen or

mechanics in their interest *in* and knowledge of horticulture. I need only to refer you to our annual list of membership to show you that more than one-half of the members of our association belong to towns and cities instead of being farmers, and if you need any further proof of my assertion I might take you around among the farmers of the country and let you see their surroundings. The trees, shrubs and plants on their farms (or the want of them)—their neglected orchards and fruit gardens. Their unmown lawns covered with burdocks, Canada thistles and other noxious weeds, ornamented with chicken coops, wood piles and broken down farming implements, instead of trees, shrubs and flowers, and compare them with the gardens, trees and lawns in our towns and cities. Our farmers, as I have intimated, have all the surroundings that should induce them to have a taste for horticulture and all the advantages for cultivating it; but how seldom do they improve them. Take the opportunity of selecting a building site and the advantages for laying out lawns, planting trees and shrubbery, and making home attractive in general, to say nothing of fruit growing, that farmers have, and how do they improve them? Are the best sites selected? Are the standing forest trees, if there are any, so left as to present the finest aspect? Are other trees planted with the same end in view? Are lawns laid out and carefully kept? Are other farm buildings located so as to make the least obstruction to the views from the dwelling? A majority of our farm houses in Canada look as though they had been built so as to be as close to the barns and pigpens as possible, instead of being located so as to command the finest views and prospects, and the approaches to them are oftener through narrow lanes and barnyards, covered with their accumulations of filth, than they are through fine avenues of trees or over grass covered lawns, decked with flowers and foliage, and as for conservatories or even plants and window gardening, which brighten so many homes in towns and cities, how little of them do you see among farmers! And come down to the growing of fruits, even for home consumption. I will venture the assertion that the majority of town and city people who are in as good circumstances financially as farmers, are better supplied with the fruits of our country than the majority of farmers are themselves, though they have every facility for growing them. Why it is that farmers do not supply themselves with these luxuries, when they can so easily do so, I could never understand. Take the farmers of Ontario as a whole and there is not over one in fifty, I will venture to say, who grows strawberries and raspberries enough for their own consumption—and what is there to hinder them? They will grow readily in any part of the province; and further, there is not one farm in fifty outside of the Niagara district that has a grape vine on it except it may be a wild one, and the same might be said of plums and pears and some of the other fine fruits. I know a man, right over here in the county of Haldimand, who has recently gone to growing grapes and pease, and he told me a few days ago that his best market for his fruit was right around among the farmers in his own neighborhood; and there is no better soil and climate for growing these fruits in Canada than there is in that locality. Is it any wonder that any community, who are so blind to their own interest, are badly afflicted with politics? Take forestry. How little judgment and foresight has been exercised by the farmers in removing the forests from their farms or in planting out forest trees. Tree after tree has been cut down indiscriminately, no attention being paid to wind breaks being left or shade for the flocks and herds on the farm, or in replanting these where needed, to say nothing of preserving the beauty of the landscape; until to-day the winter winds are sweeping over vast sections of our country which are almost treeless, removing the snow from the white fields and strawberry beds—where there are any—and from the roots of other plants and trees—robbing them of their natural covering and protection, letting the frost in to destroy their roots, pinching and blasting the fruit buds, sweeping through the barnyards among the shivering cattle, penetrating the dwellings of the farmers themselves, necessitating an extra supply of fuel (which they find is now getting scarce) and the putting on of extra storm doors, blinds and windows. Is it any wonder that the boys, and girls, too, want to leave the farm and get into the city, out of the wind in the winter time, or that the extra attractions of fine trees and lawns, fruits and flowers, should entice them to stay there in the summer. It seems to me if farmers want to solve the great problem which we hear so much discussed, "How to keep the boys on the farm," that they have got to go.

to work and make their farms and farming more attractive ; that they must make their farms something more than mills to grind out dollars and cents ; that they must interest their children in the products of the farm and in the beauties of nature around them ; that they must give them trees, plants, fruits, and flowers to cultivate, and teach them how to adorn and beautify their homes and make them attractive. Make them to feel that they have an ownership and interest in these things. I believe that every true Canadian, whether he be a farmer or not, has an interest in this subject—for the wealth, yea, the very existence of our nation, depends upon the products of the soil and if our farms and farming becomes so unattractive that our young men can not endure to stay upon the land and till it, what is to become of us as a nation ? I am glad to see that our Minister of Agriculture has taken an interest in horticulture among farmers and sent out missionaries to the farmers' institutes throughout the Province to discuss and agitate this subject. I should now like to see our Minister of Education take this matter up. What is there to hinder the introduction of text books into our common schools teaching the principles of horticulture in connection with botany and chemistry ? Would not a knowledge of the construction of plants and flowers and how to hybridize and produce new varieties of fruits and grains, how to propagate from cutting and bud and graft trees, be as interesting and useful to farmers' sons as a knowledge of ancient history, or geography or algebra would ? I doubt if there is one farmer or his sons in one hundred that knows anything about these simple principles ; yet how useful they would be to them and what an incentive they might become to the young farmer to develop and bring out the fruit and other resources of the country, besides interesting him in and attracting him to the labors of the farm, and I am not so sure that these studies might add something to the knowledge of some of the students in our higher schools, who, though their heads may be filled with Greek and Latin, don't know all there is to be learned between the house and barn yet. I have not introduced this subject to cast any reflections on farmers, but with a sincere desire to awaken them to a realization of their own interests and responsibilities and a hope that they may in the future become more interested in horticulture.

Mr. MORDEN thought the farmers' lawns and surroundings would compare with those of other people. (Hear, hear). He had never failed to visit a town in Canada or the United States that he was not disgusted with the surroundings of human habitations. It is a great astonishment that people will live with those surroundings. It is a common thing in our towns to find the vilest weeds growing in the streets and yards. If we could reach the city people as well as the farmers it would be very desirable indeed.

FERTILIZATION OF PLANTS.

Prof. PANTON gave the following address :

1. *Definition.*—Fertilization may be defined, as the process by which a plant has the pollen of the stamens, applied to the stigma of the pistil, so that the elements which it contains, reach the ovule in the ovary, and so influence it that it becomes a seed containing an embryo.

2. *The Parts of a Flower.*—To understand this process, we require to know something about the parts of a flower. These are : the outside whorl of leaf-like structures termed the Calyx ; its parts are called Sepals, and as a general thing, these are colored green. The next whorl is called the Corolla, and the separate parts Petals, and are usually colored.

It is possible for a plant to produce seed without either of these, and hence the Calyx and Corolla are sometimes spoken of as the non-essential organs, in contrast with the Stamens and Pistils, without which it is impossible for a plant to produce seed, and hence the term essential organs applied to them. Stamens are usually distinguished by having a slender thread-like stalk, the *filament*, on

the upper end of which is a round or oval body called the *Anther*, which contains the *pollen* grains. Under the microscope pollen grains present a great variety in form and general appearance, though to the naked eye pollen appears like dust. Some are perfectly round, others oval, some smooth, others rough. So marked is the difference in the pollen grains of plants, that an experienced observer can identify the plant by merely seeing some of the pollen. Few species show a more beautiful form than the *Cuphaea* (cigar plant). A close examination of a pollen grain shows that it is composed of two coats, an outside covering (*extine*) and inside of that another coat (*intine*), and yet the whole microscopic. Consequently whatever contents are inside of these must be of an exceedingly minute character.

The pistil usually occupies the central portion of the flower, like the stamens, there may be several on the same flower.

The upper part, usually more or less sticky, is called the *Stigma*, from that down, especially where slender, is the *style*, and the enlarged portion at the base is the *ovary*; in this you find the unfertilized ovules, which, after fertilization has taken place, become seeds. Now an ovule, under the microscope, shows several structures; the central portion nucleus (better nucellus because we have the term nucleus applied to a structure in the cells of plants), a part of this develops into the *embryo sac*, and a portion of this, exceedingly small, forms the *embryonal vesicle*, which becomes a very important factor in fertilization for here, after that process takes place, the embryo is developed.

The nucellus is surrounded by two coats; at one place there is an opening between them known as the *micropyle*—the use of which will be referred to afterwards.

3. The process of Fertilization.—The pollen grains reach the stigma of the pistil, and soon after the outer coat of the pollen bursts, and the inner develops a tube, which begins to penetrate its way down through the style, and finally reaches the embryonal vesicle of the ovule, by passing through a small opening (*micropyle*) between the coats of the ovule. You will remember I spoke of the ovule as consisting of nucellus, embryo sac, and embryonal vesicle, the last a very minute portion; but when it is reached by the pollen tube, which lies alongside of it, an interchange of elements takes place, and the process of fertilization is effected. At once changes commence in the ovule, and it develops into a seed possessing an embryo.

Sometimes the pollen of a flower fertilizes its own ovules, and, in fact, this was once thought to be the regular way; but close observation and thorough investigation seems to show that this is more exceptional than otherwise. Experience seems to indicate that plants fertilized in this way, are likely to produce weakly plants from their seeds. This method is known as self-fertilization. Where pollen fertilizes the pistils of others flowers of the same species, the term cross-fertilization is applied. In such cases seeds are produced, which give rise to strong, healthy, vigorous plants. *Viola* (violet), *oxalis* (sorrel), *stellaria* (chickweed), *euphrasia* (eyebright), are some examples of the few, that seem to be favorable to self-fertilization.

If cross-fertilization seems to be the common method adopted by nature, there must be some means by which pollen is transferred to the pistils of plants. The study of this becomes one of the most fascinating pages in botany. Time will not permit me to enter this interesting field further than to throw out a hint or two that may lead readers to follow up the subject when opportunity presents itself.

4. *Aids to Fertilization.*—The following aids to fertilization may be referred to here:

(1) Wind. Such plants are usually crowded together, (grasses) unattractive, and some bloom before the leaves appear (soft-maple).

(2) Insects. Flowers aided in this way possess attractive colors, perfume, and supply shelter in some cases, and food (honey) in others.

(3) Birds. Especially in the case of the humming-bird.

(4) Water. This is in the case of some water plants whose pistillate flowers are in the upper part and float above, while the staminate are below. At the proper time the staminate ripen, rise to the surface and bear pollen to the pistilate through the agency of currents.

5. *Nature of Flowers.*—We shall now examine the form and nature of flowers, and see to what extent they seem favorable to cross-fertilization.

(1) Monoecious flowers. These have the staminate and pistillate flowers on the same plant. Staminate refers to those bearing stamens and pistillate to those with pistils. In some cases they are near each other, while in others (Indian corn) far apart. Good examples of monoecious flowers are seen in the begonia, corn and pumpkin. Many a one looking forward to securing a fine crop of pumpkins, has been much disappointed to find autumn come without the golden fruit. Had he examined the plants in flower, he would have seen that they were nearly all staminate flowers and hence useless to bear fruit. No plant is more liable to cross than corn, no doubt on account of its wealth in pollen and the elevated position it occupies at the summit of the stalk, while the silken threads (portions of the pistil), indicate the pistillate flowers below. It would seem that monoecious plants are naturally to a considerable extent favorable to cross-fertilization.

(2) Dioecious. In this group you have some plants on which all the flowers are staminate, and others on which all are pistillate, consequently the source of pollen (stamens) is much removed from the pistils, and it would seem that cross-fertilization must take place. Willows, poplars, and often in the soft maple we see trees of this character; some with none but staminate, others pistillate flowers.

(3) Hermaphrodite. Here we have flowers each having stamens and pistils, and apparently fitted for self-fertilization, but even in this case you will observe conditions that seem adapted to prevent self-fertilization and be favorable to cross-fertilization.

(a) Dimorphic flowers are such that the stamens are much longer than the pistils, or the reverse, and consequently not well adapted to supply the pollen of a flower to its own pistil. Examples: Primula (primrose), Sinum (flax), Mitchella (partridge berry) and Houstonia.

(b) Dichogamous flowers have the stamens of a flower ripen before the pistils of the same, or the pistils ripen before the stamens. Examples of *Protandrous*, those on which the stamens are matured before the pistils, and consequently the pollen of such can only be of use in fertilizing the pistils of other flowers mature at that time:—*Campanula* (bell), *Gentiana* (gentians), *Verbena*, *Lobelia*, *Epilobium* (willow-herb) and flowers in the orders *Compositæ* and *Umbelliferae*. *Protogynous*, those in which pistils mature first: *Plantago* (plantain), *Scrophularia* (knotted figwort), *Anthoxanthenum* (sweet vernal grass), the interesting plant *Aristolochia* and the apple.

(c) Herkogamous flowers, those in which there is a peculiarity in form or structure favorable to the prevention of self-fertilization to a great extent. This strange modification is especially seen in what are known as papilionaceous (from resemblance to a butterfly), flowers common in the order Leguminosæ (bean family). Wistaria, Robinia (locust), Apios (ground-nut), Phaseolus (beam), all have such peculiar corollas, that when an insect alights upon them to proceed in search of nectar, it receives a blow on the underside of its body from the pistil, which comes up in advance of the stamens and receives any pollen the insect may have about it collected from other flowers, and at the same time this pistil throws on to the insect pollen of that flower which has been prevented from reaching the stigma, by a collection of hair-like structures arranged on the style of the pistil. Thus we see a wonderful arrangement to aid in transferring pollen of one flower to that of another. In Kalmia (American laurel) and Berberis (barberry) we find the anthers of the stamens bent back into pockets on the petals, but the moment an insect alights on the flower, if the stamens are matured, they spring and fire the pollen upon the insect. This it is likely to carry away to other plants. The Iris (flag), and very many of the Orchids also show wonderful structures in their flowers, which seem to indicate that these modifications are for the purpose of favoring cross-fertilization.

6. *Practical results from a study of Fertilization.*—(1) It explains the innumerable varieties of plants in nature. (2) Becomes of practical value in developing new varieties by art, and enables man to obtain innumerable kinds of fruit, grain and flowers.

Fertilization of varieties gives rise to *crosses*, the seeds of which are fertile, while that of species gives hybrids of which the fertility of the seeds cannot be relied upon.

In hybridization the term generally applied to the process of crossing plants experience indicates:—

(a) That the characters of the new plant follow the nature of the plant in which the pistil was used.

(b) That the characters of the fruit follow those of the plant from which the pollen was taken.

In other words, if you wish a change in fruit use pollen from a better fruit-bearing plant, but if you want a better plant, use the pistil on a vigorous healthy tree, etc.

Some have succeeded in developing strange forms by hybridization, e.g., a cross between pear and apple, giving rise to a tree which bore fruit, to which the name "What is it" may be well applied. Mr. Dempsey, well known to fruit-growers, succeeded in doing this.

Hybrid plants are not likely to revert, but if you take the seeds of such and sow them, they will likely give you innumerable varieties, and in some cases revert to the original.

Such are some of the teachings of science regarding this exceedingly attractive page in plant life, from which not only a wealth of interesting information has been gleaned, but also an immense profit derived from the practical adaptation of them in the pursuit of horticulture. We see this very markedly in our beautiful flowers, our varied fruits and valuable grains, and no doubt as the years roll on this inviting field will be worked by investigators, who will add more brilliant results to those already attained.

Prof. SAUNDERS.—A great many farmers seem to be in darkness as to fertilization. One day a farmer, knowing I kept bees, said: "We will never be able to produce a crop of buckwheat so long as bees are allowed to be kept in the country; they invariably, by visiting the flowers, destroy them, and the result is we get no grain." (Laughter.) These principles ought to be understood by every lady particularly. Our flowers and vegetables can be wonderfully improved by assisting nature. If different varieties of cabbage seed, for example, are planted together they spoil the whole affair, because the pollen is carried from one to the other, and the result is a bad mixture. I would like to hear the result of Mr. Dempsey's crossing between the apple and the pear.

Mr. DEMPSEY.—The seeds were failures, and the whole thing was a miserable failure. The whole interior of the fruit would be black and rotten. There would be nothing but a shell. The apple was the pistillate plant in that case.

Prof. SAUNDERS—One of the laws of fertilization is that in almost every instance the plant used as the male—that is, from which the pollen is collected—has the power of impressing its characteristics on the female in regard to the form and character and color of the fruit or seed or flower; whereas the characteristics of the plant itself—its figure and method of growth, and habits of propagating, are usually in the hybrid—they usually follow those that are possessed by the female form. I made a cross some years ago which illustrates this law. Taking a Clinton grape as the female, and the Buckland Sweet Water—a large white grape growing under glass—as the male, the result resembled the Clinton in form, character and appearance, foliage and growth, but the fruit was a large, loose bunch of white grapes very much resembling the Buckland in form, and to some extent in character, but possessing more or less of the acidity of the Clinton. I might cite from another class of experiments on the raspberry, where the Adelaide Black Cap was taken as the female and the Philadelphia as the male. In one instance the plant propagates from tips, in the other from the suckers. The hybrids all propagated from the tips, although they did not propagate so readily as the female plant did, or so invariably. Occasionally a sucker would be sent up, which was a very rare thing, showing that the law with regard to the characteristics which the female plant has is about as strongly impressed in nature as the contrary law that the male affects the fruit. I cite these instances as one showing the operation of the law on one side, and the other on the other side. Hybridization cannot be accomplished without a great deal of care. People have succeeded occasionally by tying a branch of one sort in among the flowers of another variety and intermingling, and then showing those seeds as hybridized seeds. There may be a few instances of hybridization occurring in that way, but they never can be calculated on with certainty, because you are never sure whether hybridization has taken place or not. In crossing such flowers as the grape, where the stigma is very tender and easily injured by the fine forceps that you use to tear off the corolla and the calyx, you will find that the flower will be injured in nineteen cases out of twenty. In one of the old reports of the association I published my failures in hybridization, and any one will see that out of thousands of trials there were very few successes. By persevering you can get results that will be satisfactory to you and a benefit to the community; and this process is beneficial not only in the immediate results you get from a good cross, but by sowing the seed obtained from these crosses. A starting point is obtained in a case of that kind that has been compared to the wheel of a cart—the hybrid being the starting point. Your varieties extend in different directions, one upwards and one downwards, and one sideways and one below; and you have varieties that run back to the

original wild stock, and other varieties that by some mysterious process have added to them virtues and qualities which neither of the original parents contained; and you have a starting point from which there is no calculating what the results will be, because the continuity of nature being once rudely broken in on by this process of crosses, the tendency to variation is increased, so that by continuing the varieties we have we might produce as good results as by hybrids. In wheat, barley and oats it does not seem as if the agency of insects comes in at all. The grains appear in every case to be self-fertilized, and hence I do not think there is any likelihood of new varieties of wheat or barley or oats being obtained by cross-fertilization in nature, unless it be by accident, where, for instance, a grasshopper or some predacious insect may have eaten away a part of the enclosure surrounding the essential organs of the plant, and thus exposed them in a way that the wind or insects could carry the pollen from one to the other. In that class of plants we can only look for useful results by artificial impregnation. I have succeeded in securing 25 or 30 grains of hybridized cereals to start with this year, the growth of which will be watched with a good deal of interest to see what tendency they develop, and how far they combine the qualities of the two useful species which it has been aimed to combine. Mr. Hilborn, my assistant at the Experimental Farm, has succeeded in making quite a number of crosses with raspberries with different varieties, and also in some other departments of the same line; and I think a very important feature of the farm will be the origination of new varieties by both hybridization and cross-fertilization as well as by selection.

Prof. PANTON.—Do you find that those hybrid raspberries of yours are reverting back to the black in flavor?

Prof. SAUNDERS.—Not the plants themselves, or the plants struck from the roots or tips of those that have been produced; but sowing the seed of those, and raising another generation, they sprout in every direction, some white, some black, and some red, so that I have good hopes that by sowing the seed of the best of these we may multiply varieties of a useful character with much greater rapidity than we could hope to get them in any other way.

BIRDS USEFUL AND INJURIOUS IN HORTICULTURE.

Mr. T. MCILRAITH (Hamilton) read the following paper:

Although I have read with interest the reports which have from time to time been issued by this Association, and have heard with satisfaction of the success which has attended the efforts of its members in the production of new fruit, I have not hitherto been present at any of the meetings. Permit me, then, to say, that I consider it an honor to meet with those who are doing such an important work in the Province, and I had much pleasure in complying with the request of your secretary to be present on this occasion.

I do not come as a fruit grower, although I have fruit trees, and many native flowering shrubs near my home, nor yet as a fruit dealer, although for several years I have consigned an annual shipment of apples to friends in the old country. Last fall I sent a barrel of this fruit, grown near Hamilton, to a friend in Devonshire, which seemed at the time to be like sending coals to Newcastle, but in due course the receipt was acknowledged with the remark that "they grew large quantities of apples and made good cider in Devonshire, but produced no such fruit for the table as the Golden Russet, King of Tomkins County, Seek-no-farther, and other sorts which the barrel contained."

I have come, sir, to say a few words about our birds, the native birds of our woods and orchards, and their economic relations with the farmer, fruit grower and gardener.

With one exception I am glad to be able to speak of them all as friends, and that one exception I need scarcely say is the English sparrow. This, as we all know, is not a native of the country, but an imported species which finding here climatic and other conditions suited to its wants, has made up its mind to stay, and has increased at a rate for which we find no parallel in the history of any other bird.

In Canada there has been no concerted action towards getting statistics of its increase and habits, but in the United States, where it first settled and where its depredations first attracted notice, the government has at great expense obtained reports of its operations in every State where it has settled. All concur in the opinion that it now effects prejudicially the interests of the farmer, fruit grower and gardener to a greater extent than any other bird, while its rapid spread and increase renders it impossible to predict where the evil is to end.

Among the *direct* charges brought against the sparrow by the fruit growers is that of visiting the orchard in the early spring and doing serious injury by eating out the germs of the fruit buds; the peach, pear, plum, apricot, cherry, apple, currant, grape being all sufferers.

Later in the season, its visits to the vegetable garden are equally disastrous, for it attacks lettuce, peas, beets, radishes, cabbages and cauliflowers as soon as they appear above the surface, and even the seed has been taken up and devoured before it has had time to germinate. So great, indeed, has been the injury thus sustained, that in many localities the market gardeners have found it necessary to cover their garden beds with netting to prevent the total destruction of the crops. As the season advances the ripe fruit is attacked, and besides what is eaten, large quantities of apples, pears, peaches, plums, tomatoes, grapes and strawberries are destroyed by having holes pecked in the sides, causing the fruit to drop on the ground or decay on the branches.

In some localities where the grape industry once flourished, it is no longer possible to continue it with profit on account of the sparrow pest, though some growers, as a last resource, have tried to save their crops by enclosing the ripening clusters in paper bags.

While hundreds of reports have been sent in to the Department of Agriculture from different points in the union confirming the truth of the foregoing statement, others equally numerous are available to shew that the farmer does not escape the general scourge. The purport of these may be summed up in the words of Mr. Hoadly, who has been intrusted with the collection of evidence:—

"Annoying and injurious as the sparrow is to the fruit grower and vegetable gardener, the loss it inflicts on the producer of cereals is still greater.

Though for its permanent residence it prefers populous cities and places of abundant traffic and commotion, still, in anticipation of the harvest season, it gathers in enormous flocks, and leaving the cities and towns moves off into the surrounding country to feed upon the ripening grain. Its consumption and waste of corn, wheat, oats, rye, barley and buckwheat in many parts of the country is enormous. It feeds on the kernel when it is in the soft, milky state, as well as when it has matured and hardened, and in fields of ripe grain it scatters upon the ground even more than it consumes. Instances have been reported where in place of a full or fair crop, only the straw remained to be gathered."

Besides the foregoing *direct* injuries chargeable to the sparrow, it *indirectly* causes considerable loss by driving away our native birds.

Before the advent of the sparrow the insect pests in the garden and orchard were fairly kept in check, being sought for as food by such birds as the robin, catbird, blue bird, song sparrow, house-wren, yellow bird, oriole, vireo, phœbe, purple martin and white-bellied swallow. All of these have now been either entirely driven away from their former haunts, or remain in greatly reduced numbers under perpetual annoyance. The sparrows have many bitter family quarrels among themselves, but should a bird of a different species appear upon the scene, it is astonishing to see how quickly they lay aside their own disputes and unite in driving off the stranger.

The robin, from its large size and courageous nature, holds his own against the sparrows, better perhaps than any of the other birds named, but even its eggs and young are sometimes attacked and destroyed by this merciless marauder.

The purple martin, with care still has a footing on the cornice beneath the projecting roofs of a few of our city buildings, but should a pair seek to make their home in a garden box, as formerly, they have a continual fight for the occupation, and have even been known to be overpowered by numbers and killed in defence of their home.

Our native birds being thus driven off, the insects are allowed to riot unchecked among the buds in the garden and orchard, and do far more injury now than they could have done while their numbers were reduced by the birds.

On the first appearance of the sparrow among us, it was treated with great kindness and consideration.

The city council of Hamilton, with characteristic benevolence, erected a commodious house for it in the centre of the city, and for a time it was fed daily. Now the feeling toward them has changed everywhere, and the most important consideration is, how to diminish their numbers, or if possible to get rid of them altogether. Dr. Fisher, of the Department of Agriculture at Washington, recommends poisoning in a variety of ways—by strychnine, arsenic, corrosive sublimate, nux vomica, etc. This plan has been tried at the experimental farm at Ottawa, but has not been quite successful, for the sparrows are cunning, observant birds, endowed with more wisdom than some bipeds of a higher class. Should one of their number be observed to stagger, or be otherwise affected by what they are eating, the feast is stopped at once and not again resumed. On this account, a slow poison is recommended which will not take effect till some time after the birds have left the feeding ground.

The sparrows have not yet appeared in Canada in such numbers as they have done farther south, but even here they are on the increase, and with the foregoing facts in view, it becomes a question whether this Association should not take some steps to abate the sparrow nuisance before it gets entirely beyond control.

The history of the sparrow has become so important from its unprecedented increase and spread over such a vast territory, together with the extent of its ravages wherever it has settled, that large sums of money have been expended in gaining information which enables us to speak of its habits with some degree of certainty. But when we turn to consider the economic relations of our old garden friends with whose appearance we are most familiar, we have to inquire into the nature of *their* food, and on this subject our knowledge is so far from complete that any conclusions arrived at must be considered as only approximate.

Much has been said in a general way, by all writers on ornithology, about certain species of birds living on insects, and certain other species living on seeds; but we have many that change their diet according to the season of the year, and it cannot properly be included in either of these groups. Another important consideration is, to determine whether the insects destroyed by the birds are injurious or beneficial in farm or garden. Even on this point there is still some difference of opinion in regard to the true position of certain species.

Among the seed eaters, similar difficulties occur, as many birds are known to feed freely on whatever suitable seeds are available, without considering whether they are noxious to the farmer or not. In this way a bird may, during one part of the season, be doing the farmer good service, and at another he may be doing injury in a corresponding degree. In this connection I would mention the case of the bob-o-link, which, while with us, lives almost entirely on insects, and is considered highly beneficial, but when in vast flocks it reaches the rice fields in the south, it annually entails a loss of thousands, if not of millions, of dollars on the planters, by the destruction of the crops. With the foregoing facts in view, it will be seen how nearly impossible it is, in the present state of our knowledge, to form anything like a positive idea of the economic value of our birds; but we know enough of the habits of many of the species to believe that the balance for good is in their favor, and so let us protect and encourage them as far as in our power.

Among our garden birds, no one is better known than the robin, and a cheerful, joyous fellow he is, turning his bright red breast to the east in the early spring morning, and hailing the rising sun with his *hearty* if not very *musical* ditty. That he is fond of fruit cannot be disputed, and he is a good judge, taking only the finest of the cherries, but he is also known to destroy large numbers of cutworms, caterpillars, grubs and beetles, whose ravages might have far exceeded his own.

Dr. King of River Falls, who has, at the request of the State of Wisconsin, prepared the most exhaustive report I know of on the food of birds, says regarding the robin:—"In its method of obtaining food, and in the situation from which its food is gleaned, the robin performs a very important work, and one for which few other birds are so well adapted. So important is this work, that the small quantity of fruit it consumes is but a stingy compensation for the services which it renders, and I know of no bird whose greater abundance is likely to prove of more service to the country. Its eminently terrestrial habits, its fondness for larvæ of various kinds, its ability to obtain those which are hidden beneath the turf, give it a usefulness in destroying cutworms in the larval state which no other bird possesses in the same degree, and for this feature of its economy alone, its greater abundance should be encouraged."

Another familiar garden bird, now less numerous than formerly, is the catbird, which, like the robin, is a member of the thrush family; and it, too, delights in the society of man. It is not so much a city bird as the robin, neither is it found in the heavily timbered woods. Its choice of a residence is in the garden of our suburban villas, or near a log house on the edge of a clearing. In such places its lithe, handsome form may be seen gliding among the shrubbery, and its rich melolious notes, when heard morning and evening, are often mistaken for those of the brown thrush. Its food consists largely of insects, and in the season it also takes the berries of our wild and cultivated bushes, but a careful examination has shewn that the balance of work done has been in favor of the gardener, so by all means give the cat-bird the benefit, and encourage his presence in the garden, where his lively manners are always interesting.

The Baltimore oriole is the most gaily attired of all our garden songsters, and none build a more artistic nest. About the middle of the first week in May, the clear flute-like notes of the male are heard for the first time in the garden in the early morning, the journey from the south having been performed by short stages during the night. A few days afterwards the females arrive, and soon the pair are seen busily engaged weaving their curious purse-like nest, which is usually suspended from the drooping branch of an elm, or other suitable tree. It is a pleasing sight to see the glowing colors of this bird shewn against a background of Norway spruce, and no one of our feathered tribes more quickly attracts the notice of strangers, but it is charged with visiting the orchard to the injury of the fruit.

The food of the oriole, however, consists largely of insects, and it is known to take many of the injurious forms which other birds do not care for. As an instance of this, it has been seen to put its head through the web of the tent caterpillar, and remove the inmates. It is also known to feed freely on the insect known as leaf rollers, as many as twenty-five having been taken from the stomach of one oriole. It thus takes a high stand among beneficial birds, and should be protected accordingly.

The American goldfinch is another of our most showy birds. It resides with us throughout the year but loses its gay colors during the winter and is therefore less noticed during that season. It is very abundant and is generally distributed in all open places, feeding almost exclusively on the seeds of noxious weeds, such as the dandelion, burdock, fox-tail grass, etc. For the consumption of the seeds of the Canada thistle alone it is entitled to our protection and I think it is seldom molested.

The case of the crow is one which requires consideration, and I have no official report on it to refer to. Many writers give it credit for doing great good in the destruction of caterpillars, grubs, beetles, etc., which it picks up while following the plow. No doubt it eats these as it will eat anything else that is eatable, but it also does great havoc by pulling up and devouring the sprouting corn.

In the opinion of many observers it destroys more young chickens, ducklings, goslings, etc., than all the hawks and owls put together. It is known to rob the nests of small birds, taking the eggs and even tearing out and devouring the callon young.

I would strongly urge those who have opportunity to do so, to observe and take notes on the habit of the crow and to let him have his true position as the evidence may direct.

The woodpeckers as a class deserve our protection on account of the service they render in the destruction of the wood-boring grubs and other noxious insects which infest our fruit and forest trees. They all take a little fruit now and then by way of a relish but the true feeding ground of the woodpecker is among the timber. The yellow bellied species, a bird of handsome plumage, is the one which makes those horizontal rows of holes which we see around the trunks of the trees. In some sections where trees are scarce it is said that those holes are so numerous and so close together that the tree becomes girdled and dies in consequence, but no instance of this kind has come under my notice. I believe that the holes are drilled to allow the birds to feed on the saccharine fluid which exudes from them. So far as I have noticed the tree is not thereby in any way injured.

Perhaps there is no class of birds regarding whose habit so much misapprehension exists as the hawks and owls. Every man or boy who could handle a gun used to think he had accomplished a feat when he succeeded in killing one of those birds, but the subject has been taken up in earnest by the Department of Agriculture at Washington and we are likely soon to know all that can be known regarding their food. Dr. A. K. Fisher, assistant ornithologist of the department who has instructions to make an exhaustive report on the subject, has kindly sent me some sheets which have been published in advance. Already several hundred of the birds have been sacrificed to give an opportunity of examining the contents of their stomachs and the results shew largely in favor of the birds, some of which rarely if ever touch poultry, while they render incalculable service to the farmer by the destruction of innumerable rats, mice and other small mammals.

Of the large owls the one we most frequently see or hear about is the great horned owl *Bubo Virginianus*. It is the strongest and most fierce and daring of all the family, and at times is very destructive to poultry. If one of those birds gets into the habit of visiting the farm buildings and taking the chickens, means should be taken to stop proceedings at once or it will return night after night and take the spoil as long as it lasts. The species is not very numerous and many individuals never come near the poultry but spend their lives in the solitude of the woods where they feast on ruffed grouse, rabbits, and other small mammals.

The long and short eared owls which we see skimming noiselessly over the meadows in the dusk of the evening feed almost entirely on mice and are therefore true friends of the farmer. Out of forty-five stomachs of this species which were examined four contained small birds, thirty-four mice, three other mammals, seven insects, and six were empty.

Much the same may be said in regard to the barred owl, though strange to say in the stomachs of two individuals of this species were found remains of their near relative the screech owl, and in another those of the saw-whet, but of thirty-seven stomachs examined sixteen contained mice while the others contained frogs, insects and crawfish.

The little screech owl which is often very common in the barns during the winter has a record which shews it to be well entitled to protection as one of the best friends of the farmer. Of ninety-four stomachs of this species examined one contained poultry, twenty small birds, forty-one mice, thirty-five insects, and several it is to be regretted were empty.

The saw-whet owl is smaller than the preceding in size, is without the ear tufts and by no means as common as the preceding. Of this species the stomachs of only six were examined and all contained mice.

The marsh hawk, slender in form with long pointed wings, dark brown above lighter below, is often seen sailing over marshes and wet meadows. Of forty-six stomachs of this species examined five contained poultry, or game birds, five small birds, twenty-four mice, nine other mammals, eight insects, three reptiles, and one was empty. The large consumption of mice by this species bespeaks for it the protection of the farmer, but it is often needlessly killed by the gunner while he is watching for ducks.

The two following species which resemble each other in color but differ in size are the most destructive to poultry and small birds of all the hawks. They are both quite common, mostly in spring and fall, and excite the admiration of those who are fond of witnessing active exhibitions of bird life by the dexterity

they show in capturing their prey. The sharp shinned hawk is the smaller of the two. The tail is long, the legs slender, and the claws extremely sharp. He is a terror to small birds, whose head he frequently takes off with a jerk at short notice, but is too light to do much mischief among the poultry, though he does sometimes make the attempt. Of forty-eight stomachs examined two contained poultry, thirty-five small birds, four mice, two insects, and ten were empty.

The other one of the pair referred to is Cooper's hawk. It resembles the preceding one in appearance but is a larger, stronger bird and more injurious in proportion. This is the one which does most mischief among the poultry and truly deserves the name of hen hawk, though that title is often applied to other comparatively harmless species.

Some hawks have the habit of sailing high overhead in wide circles, carefully scanning the landscape below with eyes which can readily be changed from a telescope to a microscope, but the species we are describing skims noiselessly along in the shade of a fence or row of bushes and pounces with inconceivable velocity on anything suitable which comes in its way. Of forty-six stomachs examined fifteen contained poultry or game birds, seventeen other birds, one mice, one frog, one lizard, two insects and eleven were empty.

The red-tailed hawk, from its large size and grand soaring flight, is well known throughout the country. It is the one usually spoken of as the hen hawk and has always been charged with carrying off poultry. On this account a more exhaustive examination has been made of this species than of any other, no fewer than 311 stomachs having been dissected. The result has shown that of all that large number only twenty-nine had partaken of poultry, while 203 had mice, the others having used insects and reptiles, while a few were empty. I look on this as the most valuable result in the whole examination, removing as it does the stigma from a bird which has always been persecuted as a robber of the roost, and placing it in its true position as a friend to the farmer to whom it renders great service in the destruction of so many mice.

The red shouldered hawk resembles the preceding in general appearance and its habits are similar. It is quite common in southern Ontario where it is known as one of the hen hawks. That it does scoop up a chicken now and then cannot be doubted, yet the examination of 102 stomachs showed that only one contained poultry, while sixty-one had taken mice, twenty other mammals, forty insects, fifteen reptiles, and a few had used a mixed diet of earth worms, crawfish, etc.

There are many other species of bird which well deserve notice, but I have already occupied much of your valuable time and will now draw to a close. On reviewing the subject generally I would recommend that means be taken at once to check the increase of the English sparrow, but all other small birds I think are entitled to protection, the balance of their influence being for good and therefore the more we have of them the better. Of the two hawks most destructive to poultry and small birds (viz., Coopers and the sharp shinned), I can only say that they are natives, and may in some way not known to us, prevent the undue increase of certain species of small birds, thus maintaining the balance of power in the economy of nature, though I must admit that I think their presence could well be spared, unless they could be trained to confine their attention to the English sparrows.

The great horned owl should be kept in check as indicated, and the crow may well be left in the hands of the farmer who is most affected by his operations.

I have only further to say that I have at home mounted specimens of all the birds I have been describing which I will be pleased to shew to any of the members who may find time to pay me a visit at Cairnbrae.

Mr. E. D. SMITH suggested that the Government be urged to take steps to destroy the sparrow. The robin is terribly destructive to the crops, so that we lose more than we gain. We subdue them by taking their nests, destroying their young, and later on shooting them.

The SECRETARY moved, seconded by Mr. E. D. SMITH, that Prof. Saunders, Mr. McIlraith and Mr. Denton be a committee to prepare a resolution addressed to the Minister of Agriculture asking legislation regarding useful and injurious birds.

Mr. GOLDIE (Guelph) said it was true the sparrow was an immigrant, but it was neither a pauper nor a lunatic. Around his residence he had 500 or 1,000, and he had never yet seen the first injury they had done to either fruits or vegetables or buds, and he knew they destroyed more insects than any other bird. He believed he was the first person to introduce the sparrows to this country. (Laughter.) His friends in the United States told him not to tell this, lest he should get into trouble and suffer lynching. (Laughter.) He could imagine that further south they might do a great deal of injury, but he could not see the injury they would do in any part of Canada, or else they must differ very much from their habits around Guelph. The tent caterpillar is a thing of the past in gardens and orchards around Guelph. He had often seen the sparrows picking the eggs off the branches, and on lanes and roadsides he had seen them frequently destroying insects, and they would catch some moths and butterflies even on the wing. He had never seen them take the buds of trees, either in England or here. He had no doubt the purple finch was the bird that often did the damage the sparrow was blamed for. He had no doubt if there were any oats in the vicinity of the town the sparrows frequented they would take a few heads of the grain around the edge of the field; but in the wheat or grain fields they are not destined to do much damage. He thought the winter destroyed so many of them that we need not fear their great increase.

Mr. WM. ORR thought the sparrow was most destructive and dirty, befouling harness, carriages, etc.

Mr. GOLDIE—That is the only thing I would have against them. I admit that they are very dirty.

Prof. SAUNDERS—We have found sparrows do a great deal of damage to our experimental plots of grain, both in the field and after it has been put in the barn, before it is threshed. Poisoning had been successful to a considerable extent by this method. Cover grains of wheat with a mixture of mucilage and water, and while wet cover these grains with arnica, mix the grains with chaff, so as to overcome the acute perception of the birds.

Mr. McILRAITH—in the Old Country my recollection is that the sparrows betake themselves to the oat fields. Such is their custom in the United States

Dr. BURGESS—The best way to get rid of the sparrows is to destroy the nests. You will have to do this two or three times a year. I know sparrows will destroy fruit buds and fruit, but the main charge I bring against them is that they destroy our native birds and our buildings.

The resolution was carried unanimously, and the association adjourned for lunch till 2.30 p.m.

GROWTH AND MARKETING OF GRAPES.

Mr. E. D. SMITH (Winona)—There is plenty of room to extend the market (1) by getting earlier grapes of good quality. We ought to have a grape as early as the Champion and as good as the Worlen in every respect. If we had that we could double our plantations. (2) At the end of the season by preserving grapes. (3) By putting on the market nothing but grapes of the very best quality. (4) By teaching the consuming population the good uses of grapes, both as food and medicine. Very little is known about that at present. The Champion is a strong grower, prolific in yield, good hardy vine, good leaf, and comes earlier than anything we have. There is a fortune for some man who will bring the right early grape before the public and handle it well. The first good grape we have is the Worden, which is at least ten days later than the Champion. The best ten days in the season for selling grapes is far more than lost, because it is occupied by a grape which destroys the sale of other grapes, being so poor. The season is partly occupied by Moore's Early, but it does not yield in sufficient quantity to compete with the Champion. We must have a grape good enough in all its points to drive the Champion out. Moyer's Seedling is not known well enough yet to pronounce positively as to all its good points. It is sweet, good flavor, and early. I think about as early as the Champion. But that is a red grape, and even if successful and as good, it may not drive the Champion out. Our thanks are due to the men who have experimented so largely in hybridization. Commercial growers have not the time, and we should be thankful we have men who have time to produce a variety of grapes. With better systems of preserving, grapes could be sold till May, and the time when strawberries come in. The best keeper I find is the Salem; but it has other qualities that do not recommend it to the commercial grower, though it is of an exceedingly good quality, fairly good yield, and handsome to look at. The great objection is the weakness of the leaf; that is the great objection, unless it can be overcome by the French mixtures. The principal one is the Bordeaux mixture. I applied it in a liquid form with a whisk. I have seen some Salem grapes packed in cork dust that are to-day as sound as when they were picked. The Vergennes do not keep as well as the Salem, nor do either of the Rogers, 3 and 4. A gentleman in Ottawa told me that he believed a thousand kegs containing fifty pounds each of the Malaga grapes were sold there every season. If that proportion is sold in other cities it would require a good many acres to raise that amount. I believe we will occupy this field one day with grapes of our own. I presume there are at least one hundred acres in the market already established. Until the Champion can be driven out by grapes of better quality it will be grown. No doubt there has been money in it; it produces so abundantly. The consumer comes along and gets a taste of this grape when it is put on the market. It is green all the time; it is bad to eat, until the Concord is put on the market, which is put on green because it is thought it will take the place of the Champion. And so we have a succession of poor green grapes in the beginning of the season, which is unsatisfactory. We must remember that the most of grapes are sold in five cent packages. A clerk or mechanic comes along and buys those grapes and finds them sour, and says: "I guess I will wait till grapes get better." He does not know the difference between Concord and Champion. He waits a week. That consumer is out of the market for a week or ten days; and perhaps he comes to try it again and gets some green Concords, and he is disgusted again; and that consumer is thrown off the market for the best three weeks of the season. I believe if we had no Champion grapes and every grape that was put on the market was good quality, three years after this we could sell three times as many

grapes as we do, and get as good a price for them. People strip their vines and put everything in the basket, and the retail dealer is disgusted, and the customer is disgusted. Selling grapes is like selling whisky or wine; they make it in such a shape that people are enticed to take some more. So I say we must put our grapes on the market in the very best possible shape, and only grow those of the very best quality. If we do that we can grow an enormous quantity of them, for we have an enormous market to supply. It is well known that to-day very few grapes are known, except for fermented wine and for eating out of hand. Those who have tried them know that all varieties of grapes are as good as any fruit when sealed, and many think them better; and yet there is not one consumer in five hundred who knows how to do them up. Thousands of people would like to have some unfermented wine, but don't know how to make it; and thousands of people do not know the medicinal value of grapes. The young fellows are weighing themselves often in the fall, and they often find that in the fall they gain from ten to fifteen pounds. (Hear, hear, and laughter.) That goes to show they must be of great value as medicine. Besides, we have the old grape cures in the old world, where people are dicted on grapes alone. They are started on one pound, and after they get accustomed to it they get so that they can use twelve pounds a day. (Hear, hear.) If we could show people the medicinal value of grapes we could dispose of a great many more. The fruit growers of Winona a few years ago struck off 100,000 copies of recipes for different ways of using grapes, and those were distributed to our customers in the cities; and I have been repeatedly asked for more of these for succeeding years, so it appears they were used. The way most of them did was to put one in each basket. I think the better way is, if you can get the person you are dealing with to take the matter up, and make it clear to his mind that it will be to his advantage as well as yours for him to distribute them in advance. At the beginning of the season I think it would be more use.

A DELEGATE—What size package do you recommend?

Mr. SMITH—It is better for us to adopt a uniform package, holding ten pounds, basket included. We would get better terms for our grapes than if larger baskets are used. Commission men in Toronto and Montreal object to handling more baskets, but they acknowledge that they would fetch half a cent a pound more than they will in 20-pound baskets. Besides, a great many grapes in the bottom of the basket are always bruised and wasted to the retailer. They are sending a great many Catawbas from the States in 4-pound baskets. In New York and Philadelphia they hold from 8 to 10 lb.

Mr. GOLDIE—Do you take them off the bunch? A. Most of our varieties tear so much that it would injure them that way.

Prof. SAUNDERS—In cooking them do you pop the seeds out? A. Yes.

DELEGATE—Will they succeed as well on sandy soil?

Mr. SMITH—Slow, feeble growers will do better on rich sand than on clay, while strong, thrifty growers will do better on deep, strong land. On sandy soil wood ashes is the best fertiliser. Bone dust is good.

Q. Should you plant out a one-year old or a two-year old? A. I would prefer a real strong thrifty one-year old to a two-year old. A one-year old Moore's Early beat Worden's considerably in growth on the same soil.

Q. How to put a veto on shipping grapes before they are ripe?

The SECRETARY—The city health inspector should look after green grapes and confiscate them.

Q. Have you ever tried "ringing" grapes to get them ripe early for the market? A. No.

The SECRETARY—This has been practised quite frequently for the fairs, in order to get large grapes to take prizes. It is practised about the city of Hamilton, I think, for that purpose. In Massachusetts, about the city of Concord, it has been practised largely for market purposes. An owner of a large vineyard there has been experimenting. He "ringed" half the vineyard by twisting little pieces of wire about the branches that were to be cut off that fall; and it is stated that the Concord grapes were ripened early enough to bring them in competition with the Worden in the market.

Mr. A. M. SMITH—Formerly our provincial prize list had a clause in, excluding "ringed" grapes from competition with those that were not ringed. I think this ought to be introduced into all rules of our agricultural and horticultural associations. It is entirely unfair for ringed grapes to compete with those in their natural condition. People who go to fairs to select varieties, see those ringed grapes, and not getting a chance to taste them, order those varieties, and when they come to compare them, say: "That is not the grapes I saw for the Salem or Agawam." As an educator of the public this grape is wrong to be shown in that way. But there is a separate class, like fat cattle; if they are to be shown wherever I am a judge I exclude them, and give a prize for quality instead of size.

A. M. PETTIT—Last year at the Hamilton fair, we consulted the directors and they told us to judge by flavor entirely, and the protests came in thick and fast. We had a hearing before the president and committee of that department, and they sustained our judgment. All judges at fairs should do the same. If the grape growers of the country should ring their grapes, it would reduce the consumption of the fruit to a very great extent, to put these weak, flavorless grapes upon the market. If we could grow the beautiful little Delaware as large as the Roger 15, it would not be the Delaware; and that is the case with many other varieties.

The PRESIDENT—The matter of ringed fruit rests with the judges at exhibitions altogether. It is very easy to tell ringed fruit by the lack of flavor, its watery, insipid taste. Judges should judge by flavor and throw them out.

Mr. DEMPSEY—I always judge from quality in grapes. I have competed against those that were ringed, but I never ring grapes, though I have stimulated the vine by using scissors and thumb and finger for pinching them; and invariably I have been satisfied with the result. We should encourage people to resist by any honest means the stimulating of fancy growths of fruits for exhibitions; or if we cannot do that, have separate prizes for ringed grapes. This is not the only evil, however; I have known cases of people sending to Quebec and to the United States for samples of fruit to exhibit at fairs as their own.

Mr. STIPE (Hamilton)—Should we not raise grapes for commercial use instead of quality? This Association would be doing a kindness to the grape growers by encouraging some principle of bringing the grape sooner into perfection, and I believe this ringing process will do it, and by that means we get a bigger price, and that is all we care for—the money. (Laughter.)

Mr. E. D. SMITH—I have seen vines that were ringed pretty regularly, and the result was that the vineyards were ruined.

Mr. STIPE—I can't agree with that. I believe a man can ring a grape, grow a cane every year, and produce the same amount of fruit, and have it in the market so early that he will beat others.

Mr. S. BURNER (Hamilton)—I ring all my grapes, and it pays me to do it, and that is why I do it. Last season I produced a little over three tons from five acres. I crop the ground with vegetables as if the grapes were not there. The vines would probably cover an acre if they were planted alone. They are Rogers. It has done no injury to the vines, but you must grow new wood every season to provide your crop for the next. If you ring the wood that produced this season and make no provision for the next, you would be minus a crop. As long as it pays me I think I will ring them.

A DELEGATE—What about the flavor?

Mr. BURNER—I don't possess that nice sense of palate that some of my friends do. In some seasons they will be watery, but in a cold late season I get the most benefit of the ringing. You get color into them, and a good looking thing in a basket, and like everything else, the best looking thing will bring the best price. I had 300 bearing vines, and 180 more to come into bearing this year. I have them in rows, twelve feet apart each way.

The PRESIDENT—How do you find the ringing affects the shipping and keeping qualities?

Mr. BURNER—I don't know anything about that because I get rid of them as quick as I can. I find that the early bird gets the worm. There is a lot of work about this ringing process, and that does not suit the fruit growers. (Laughter). I strip the bark not less than an inch in width. Anything much less than that is not of much effect. Some I have taken off before the grape was in bloom to make the grape set better, but they are generally about the size of pears before I got at them—in July generally. The ringing makes them four times as large as anybody else's.

The SECRETARY—While we may condemn ringing for exhibition purposes the question comes, is it not likely to be a profitable thing for us to do for marketing them by increasing the size and getting into the market earlier. Mr. Barry, the President of the N. Y. Horticultural Society, boldly denounced the ringing of grapes on the score of loss of quality, and in the face of these differences of opinion it will require further experiment before we can be very positive.

The Secretary read the following extract from one of the bulletins of the Agricultural Experiment Stations in Massachusetts:—

"Cutting rings of bark from the canes of the grape vine to hasten the time of ripening has been practised more or less for many years to prepare large specimens for exhibition, but only for the few years past has it been practised to hasten the crop for market."

"In a series of experiments made in the college vineyard in 1877 and 1878, and recorded in the Report of the Board of Agriculture of Mass. 1878 and 1879, it was found that removing a ring of bark early in July, quarter of an inch wide, resulted in hastening the time of ripening from one to two weeks."

"It was also concluded from very careful tests made at the time that the increased size and early maturity was not at the expense of the quality, and that as far as could be determined at that time, and which further observations have confirmed, that the vines are not materially injured by the girdling."

"Girdling has been practised in the college vineyard more or less every year since with favorable results; the canes that are to be cut away at the fall pruning only have been girdled to avoid any possibility of injury to vine or root from stopping the downward flow of sap by the gurde."

"Some seasons the results of this practice have been more marked than in others, but generally the increased price obtained for the early fruit has much more than paid expenses of the work, and in seasons of early frost, to which many sections of New England are liable, it has made the difference between total failure and fair profit."

"To save expense in the work for the past two years the girdling has been done by twisting a wire very firmly about the canes the last of June above the point where the cane is to be cut away at the fall pruning."

"About No. 20 wire has been found best, and results obtained have been more satisfactory when the wires were put on the last of June or early in July and twisted very firmly about the cane."

"While we have no proof that the vines are in any way injured (notwithstanding that we have made very careful observations for many years), we would not advise girdling the entire vine, but would treat only those canes to be cut away at the fall pruning, and would leave about one-half of the vine to grow to a natural condition."

Mr. HILBORN—I think it is that stimulating to the large size that gives them the poor quality—no matter how you do it.

Mr. STIPE—Rogers' forty-three comes in nearly as early as the Champion when it is ringed.

The PRESIDENT—There is a great deal of ringing going on. We can understand that a purchaser would select the finest-looking grapes. For general market purposes ringed grapes would not keep long enough to meet the market. It does not stand to reason that they will bear shipment so well as those that are not ringed.

Mr. BURNER—I ship to Montreal and they are all right enough. I have some in my cellar now pretty nearly as well preserved as those on the table here—all ringed.

Mr. A. M. SMITH—if ringed grapes are of poorer quality, then the large grapes will come to be suspected on account of poorer quality, and then the smaller grapes would get the better price.

Mr. WESLEY SMITH (Winona)—I would like to hear Mr. Smith speak of the best varieties.

Mr. E. D. SMITH—Among the reds I would prefer the Lindley; it is earliest to ripen, yields well, grows well, has a good leaf and hangs on to the end of the season, and it will keep reasonably well—not so well as the Salem. Among the blacks the Worden is king, but it will not keep, it cracks and must be marketed in a short season. For the balance of the season the Concord for commercial purposes would fill the bill better than any I know. For a large fine grape Rogers 43 and 44 succeeds best with me. For white, Niagara is acknowledged to be the queen, but, unlike the Concord, it will not succeed in all soils and all situations. It must not be planted in an exposed position where it is liable to be killed with the rot; that is its weak point, but it has no other. The roots must be sheltered.

Prof. SAUNDERS—What do you think of the Early Victor?

Mr. SMITH—Very good grape. Not so early as the Champion and therefore not early enough to crowd it out. It does not come up to the standard in bearing.

Mr. CARPENTER---For blacks I would say Roger 41, Concord, Worden, Roger's 43, 44, and also I think Roger 39, which we find very good after testing. For red I would put Roger 9, 15 and Delaware. I don't approve of the Salem very much---our vines seem to be going back the last two or three years. The grapes are very tender in the skin, and unless we watch closely we lose one-third to half a crop on some vines. For white I suggest Niagara and Pocklington, which is hardy. I would rather use fertilizers than barnyard manure, from results I have seen. I picked last year forty-five or fifty pounds of Roger's 9 off several vines in a poor spot that had not manure for fifteen years. I use the superphosphate from Brodie & Harvie, Smith's Falls, from 300 to 400 pounds to the acre for grapes; for field culture about 200 pounds to the acre every year.

Mr. F. W. FEARMAN (Hamilton)--I am probably the oldest grape grower in the room. I wrote a paper forty years ago, before this Association was started. The subject was: "Grape Growing on five acres." I said in the paper that in a few years there would be a large number in the Niagara district growing grapes and supplying the northern part of this country. I find my prediction verified this afternoon. We had at that time only three grapes--the Isabella, Clinton and Catawba. Some Americans were anxious that we should grow the old Fox grape, and a few of us did; and I find very little difference between the smell of

them and of a skunk. (Laughter). You could smell them from forty to fifty feet away from the waggon. (Laughter). I think sometimes that the Niagara grape was originated somewhere near the Fox grape---not to the same extent, but it has the same odor exactly. I have a small vineyard and have exceedingly great success in growing the Rogers grape on long wires. I have vines fifty feet long and loaded from one end to the other. There is no difficulty in cultivating the ground between the vines that are grown in that way, probably twenty feet apart. Those vines will bear if run wherever you like---up the chimney of a house. My Salem's are gradually giving way. After a number of years they seem to fail. I am very much pleased to see the interest in fruit culture.

Mr. PETTIT suggested that Mr. Fearman's paper be published in our annual report.

EXPERIENCE IN A FRUIT GARDEN FOR HOME USE.

Mr. T. H. RACE (Mitchell) read the following paper :--

The garden is a chosen spot of earth. The word garden, in a scriptural sense, is synonymous with that of paradise, and is suggestive of peace, plenty, beauty and enjoyment. The very first record we have of man, associated him with the garden. Man in his primeval state, innocent and holy, was placed in a garden. It was chosen for him as a habitation, a spot in harmony with the perfection of his intellectual and moral nature, and of its fruits he was recommended to eat. When man fell he was driven from the portals of his paradise, with its fruits and flowers, prepared for him ; but though he degenerated through disobedience it remained still in the ordination of the Creator that through toil and the sweat of his brow, man should make the garden a chosen and a fruitful spot for himself, yielding fruit to gratify his appetite, and flowers, with their sweet perfume, to delight his eye and gratify his sense. It is suggestive to note the divine estimate of the garden, for we find it recorded in holy writ, as a mark of God's favor to man, that he shall be given honey out of the garden, and vineyards shall be converted out of the wilderness for an inheritance. Solomon went down into the garden of the nuts to see the plants of the valley, and to see whether the vines flourished, and he said, "I made me gardens and orchards, and I planted trees in them of all kinds of fruits," and Solomon was wiser in his day and generation than most men. Jeremiah recommended the captive people to plant gardens and eat the fruit of them ; and the very last view we are given of man, in the closing chapters of Revelation, is associated with the garden, as the home of our perfected and sanctified humanity. "To him that overcometh will I grant to eat of the tree of life which is in the midst of the paradise, or garden of God." Agriculture is the most innocent, most primeval and delightful of all forms of industry, and the garden is the very acme, the perfection of agriculture, and is associated with the first and the last views of human happiness and peace.

The subject, then, you will perceive, is a noble and exalted one. But while man in his purity was given the garden as a spot of beauty and attractiveness, and the fruits thereof to eat without toil or effort on his part ; in his degenerate state the garden must be made by him, and will yield its fruits only as a reward for his labor. God made the garden for Adam, but Solomon, as he tells us, had to make the garden for himself. Under these circumstances the great question with man is, does it pay to garden ? How often do we hear it remarked by men of every class, "It does not pay me to bother with a garden ; I can buy all the

fruit and such like things that I need cheaper than I could grow them for myself." And how often I am asked the question myself, does it pay you to keep a garden and spend the time in it that you do? The only reply to remarks and questions of this kind, is that much depends on the individual, and the purpose he has in living. Life is made up of its incidents with intermingling responsibilities and pleasures, and it is not all of life to live for filthy lucre, or that which will buy bread and raiment; literally speaking, it would not pay a man to garden who lives for such a purpose with such an aim only in view. What would be labor and loss of time to one man is pleasure and recreation to another. It was said but a year or two ago, by a member of this society, that in order to have a beautiful rose in your garden, it was necessary to have a beautiful rose in your heart. So it may be said of the garden, in order to have a handsome and beautiful garden on your premises, it is necessary to have a garden in your heart. Love makes labor light, and love will remove every obstacle that comes in its way for the accomplishment of its dreams.

Such has been my experience in the garden. No disappointment has ever for an hour subdued my love for the work, or my ambition to produce a fruit or a flower to come up to my ideal. Hence to labor in the garden is to me a recreation and a source of joy and pleasure. If I were to consider the time I have spent in the garden, and the money that I have expended in its cultivation, and calculate the return in mere dollars and cents, I might say as many do, that it does not pay to garden; but when I consider the life-renewing recreations, and the pleasure that it affords me in its cultivation, the satisfaction it brings me to gather the fruit that it yields, and to eat of that fruit at my own table with my family and friends, I realize that if it be the pleasing incidents, the gratification of natural appetite, and the pleasant associations of life that make life worth living, gardening pays.

I turned my attention more especially to fruit gardening about eight years ago, and since that time my experience has not been without its disappointments. I made many mistakes, and among the greatest I may mention that of running after high priced and highly lauded novelties. I never refused a friend or a neighbor a root or a cutting of anything I had, no matter what it cost me, so that my novelties, even though they proved to possess merit, rarely yielded me anything till after all my friends had been supplied, and the novelty had become a common thing. I can recommend it as a safe rule, for all amateur gardeners to adopt—avoid high-priced novelties.

My present garden consists of about a half acre of ground, a portion of this is in lawn and rose beds, and the whole is enclosed on the east, north and west by a high close board fence. All about this fence I have planted one dozen Gregg, one half dozen each Soughegan, Tyler and Hilborn black caps; one dozen Shaffer's Colossal, and a strip of Cuthbert and Turner raspberries. I have the black and the Shaffers planted six feet apart and held to the fence with cord stretched from post to post, and between the bushes I spread, every second year, a large panful of unleached ashes, spading the ground lightly before putting them on. The Gregg I bend down every winter, and keep them to the ground by placing sticks of firewood on the tips. I never had a picking from them until I did this, as they would kill to the snow every winter. The Cuthbert I have had to treat in the same way, and, on account of their tenderness and their trouble, I am now replacing them with the Marlboro and Golden Queen. I never allow more than four shoots of the Gregg to grow, and these I nip off when about three feet high, and encourage a growth of laterals. To allow more than four shoots to grow will only take substance away from the maturing fruit.

I have two rows of gooseberries running east and west through the centre of my garden, containing nearly one hundred bushes, and two rows also of currants, containing a like number of bushes, the latter comprising the Fay's Prolific, Cherry, Moore's Ruby and White Grape. Both currants and gooseberries are planted five feet apart in the rows, with plenty of space between the latter for a grassy walk. I trim out and tie up in the fall and keep the bushes as erect as possible without using frames, and fertilize with ashes every second year. While others have complained about the mildew affecting their gooseberries I have never seen a sign of such a thing among mine; this I attribute largely, if not in whole, to the free use of ashes, together with the free circulation of air and exposure to plenty of sunlight. To protect from the ravages of the currant worm I use white hellebore dusted on in the evening or morning by means of a common glass tumbler and a piece of book muslin. If the bottom is broken off the tumbler all the better, and with this simple and convenient arrangement two hundred bushes can be gone over easily in less than an hour. About one eighth of an acre I keep in strawberries, and the rows of bushes running through the centre of my garden serve as a snow drift to give the former winter protection.

In strawberry culture I adhere chiefly to the hill system, making the rows two and a half feet apart and the plants eighteen inches in the row. Before planting I enrich the ground with stable manure, and after the second year I apply a heavy coat of ashes between the rows. These ashes serve a fourfold purpose; they keep the ground clean, they help to retain the moisture, they supply the soil with the necessary ingredients to produce an abundance of rich berries, and they drive out that abominable pest, the white grub. I plant in both spring and fall, but for a home garden I prefer the latter, after taking off a crop of early potatoes. When planting in the fall I find it always safest to litter the patch, before the snow comes, with fresh manure from the horse stable. Two years ago I had a matted patch of three years standing (Sharpless and Cherry mixed), and to experiment with ashes as a fertilizer I marked the patch, in the fall, into two feet strips, and spaded up each alternate strip. Along the centre of the two feet strips of vines I scattered a row of ashes until they spread at the bottom over a space of six inches in width. Of course these ashes killed every plant they covered, but the effect on the vines on each side was most satisfactory. The drouth seemed to have little effect on them, while those in the hill patches were completely dried up. I place great value on ashes as a fertilizer for small fruits, but for general garden culture there is nothing to compare with stable manure. Next to watching his fruits maturing, and picking them in their luscious ripeness, there is nothing that so delights the gardener's heart as to turn up a rank mellow soil teeming with earth worms, and nothing will produce this condition of soil equal to stable manure. With plenty of stable manure worked into the soil, plenty of ashes used as a top dressing, and with the soil kept free from weeds, other things being equal, the labors of the planter and gardener will be rewarded with fruit in rich abundance.

MR. JARVIS.—When and where can potted strawberries be obtained, and when is the proper time to set them out; and can an amateur like myself plant them out himself?

MR. MORDEN.—The system hinted at is the hill system. The potted plants can be got by sinking the pot under the runner as it passes out. The pot can

shortly be removed with the potted plant. Any nurseryman would be able to furnish the plants if there was a demand. The runner will start perhaps in June. Sink your pots in July. Make the earth very rich in the pot.

Mr. JARVIS.—What is the best thing to eradicate the insects that attack the roses?

Mr. RACE.—Every Saturday night I applied soap suds, forced underneath with a force pump as the aphis gets under the leaves ; and I had no trouble. I never had better bloom or finer growth. I used to try tobacco water.

SMALL FRUITS.

WHAT VARIETIES OF STRAWBERRIES, Currants, RASPBERRIES AND BLACKBERRIES SHOULD BE PLANTED FOR HOME USE.

Mr. W. W. HILBORN here read a valuable paper on this subject, which, unfortunately has been mislaid.

A DELEGATE.—Have you fruited any of Mr. Saunders' blackberries ?

Mr. HILBORN.—Yes, a number. Some of them were an improvement on Lees' Prolific. I don't know that any were an improvement on the Champion. The weather last season was too dry for judging.

Mr. CASTON.—How does the Hilborn raspberry compare with the Gregg ?

Mr. HILBORN.—It is scarcely as large in size, but hardier and of better quality.

VARIETIES OF PLUMS FOR HOME USE AND MARKET.

Mr. GEO. CLINE (Winona) read the following paper :

A FEW FACTS ON PLANTING AND GROWING OF PLUMS FOR TABLE OR MARKET AT GRIMSBY, FROM EXPERIENCE.

In giving my views on the growing of plums, I will only give those that are valuable for market, but still are good enough for home use for any person. A good list for market purposes as also for shipping are : Lombard, German Prune, Washington, Yellow Egg, Imperial Gage, Reine Claude, Coe's Golden Drop, Quackenbos, Niagara, Smith's Orleans, Duane's Purple, Pond's Seedling, Glass' Seedling, Bradshaw, Lawson's Golden Gage, General Hand, Victoria, French Prune. These for an orchard of 500 or 1,000 trees, I would divide about equally. For an orchard of 100 trees I would plant as follows :—Washington, Niagara, Lombard, Glass' Seedling, Yellow Egg, Reine Claude, Coe's Golden Drop, being very productive varieties for the number of trees, and the quality is good enough for either table, cooking or market ; all of these I have found perfectly hardy and good bearers, good shippers and selling at highest prices. There are several plums claimed to be curculio proof, but I have none entirely free. There are

some that seem more free than others from curculio, such as Smith's Orleans, Columbia, Lombard. I find one of the great secrets of profitable plum growing is to plant the best kinds, give them good cultivation and plenty of fertilizing material to keep good growth in the trees; good cultivation and fertilizers being an enemy to the destructive diseases as black knot and rot. Even the curculio dislikes cultivation, grass and weeds being a hotbed for the insect, while neglect of cultivation is death to profitable culture. Constant bearing of our best quality of budded plums is very weakening and shortens the life of the tree. I also find that the stock that plums are budded on have great influence in the growth of the trees as also on the size of the fruit and ripening of the fruit in a very dry season. The Myrobalan or the French stock grows on trees about double the size of the Canadian wild plum stock, and also there are no suckers from the Myrobalan stock, while the Canadian wild plum throws up suckers from every root near the top of ground, wherever touched by plow or harrow, making it impossible to keep an orchard in any kind of condition; also the suckers take away the strength from the tree and fruit, and in a very dry season the leaves wither and drop, leaving the fruit unripened and bitter, consequently unsaleable and worthless. Therefore, for this section, plant trees budded in the French stock.

The greatest trouble in growing plums is the black knot, which I believe is spreading very rapidly in the northern and western part of Ontario. The only remedy that I know of is to be on the lookout for it the latter part of July and first of August, cutting out all found, as that is the time the knots are formed; all escaping notice then, to be cut off at once after the leaves drop in autumn. I also recommend good cultivation and plenty of fertilizers, which have an abundance of phosphoric acid and potash in the analysis, such as Brodie & Harvie's, of Smith's Falls, fruit tree fertilizer, which is complete for fruit trees of all kinds as well as grape vines, and of which I use several tons yearly. The knot in my orchard is very much less than three or four years ago, and I think it is entirely due to the use of the fertilizer, good cultivation and cutting knots off as fast as I find them.

The rot is also very destructive in some seasons, more especially in very warm, foggy weather. Such weather being peculiarly adapted to the spreading of that disease, and the fruit should be watched very closely at that time, and be picked off at once if attacked by rot, as the rot spreads very rapidly. One plum in a cluster, attacked by rot on one morning, may spread to the whole cluster before the next morning. The rot is caused I think by fungus growth striking the plum where stung by the curculio.

In marketing plums, a great mistake is made by picking all the plums from one tree at one picking and before they are ripened enough to be picked. Plums should not be picked green, and one variety will generally keep steady packing for a week or ten days, by just picking those that are ripened enough for shipping or market; and sell at very much better prices than picked in the green state.

My remedy for exterminating the curculio is to use a solution of Paris green and water, 3 oz. of Paris green to 40 gallons water and keep well mixed, spraying the mixture on the trees with a force pump mounted on a barrel in a wagon, spraying three or four times during the season; the first time just before the blossom is all gone, and again at intervals of a week or ten days, as the weather may be showery or otherwise; heavy rains washing a certain percentage off.

In conclusion I would like to impress upon the minds of all present that my list of plums given may not do to plant in all parts of Ontario, that they may not be all entirely hardy or as productive on all soils as in mine. I think all those among you who are in any way experienced in growing fruits will agree with me that fruits do not grow the same, neither produce the same in different soils and in different localities. Even at the short distance of one mile, or less, the change is quite marked in the quality of fruit, the growth of tree or vine, as also the productiveness. The list of plums that are really good plums is quite large. I am growing some thirty barrels, but as plums for profit I would not advise planting them. I find experience is the best teacher for planters, and the lesson is not to plant largely until you know just what is most suitable for your own particular soil.

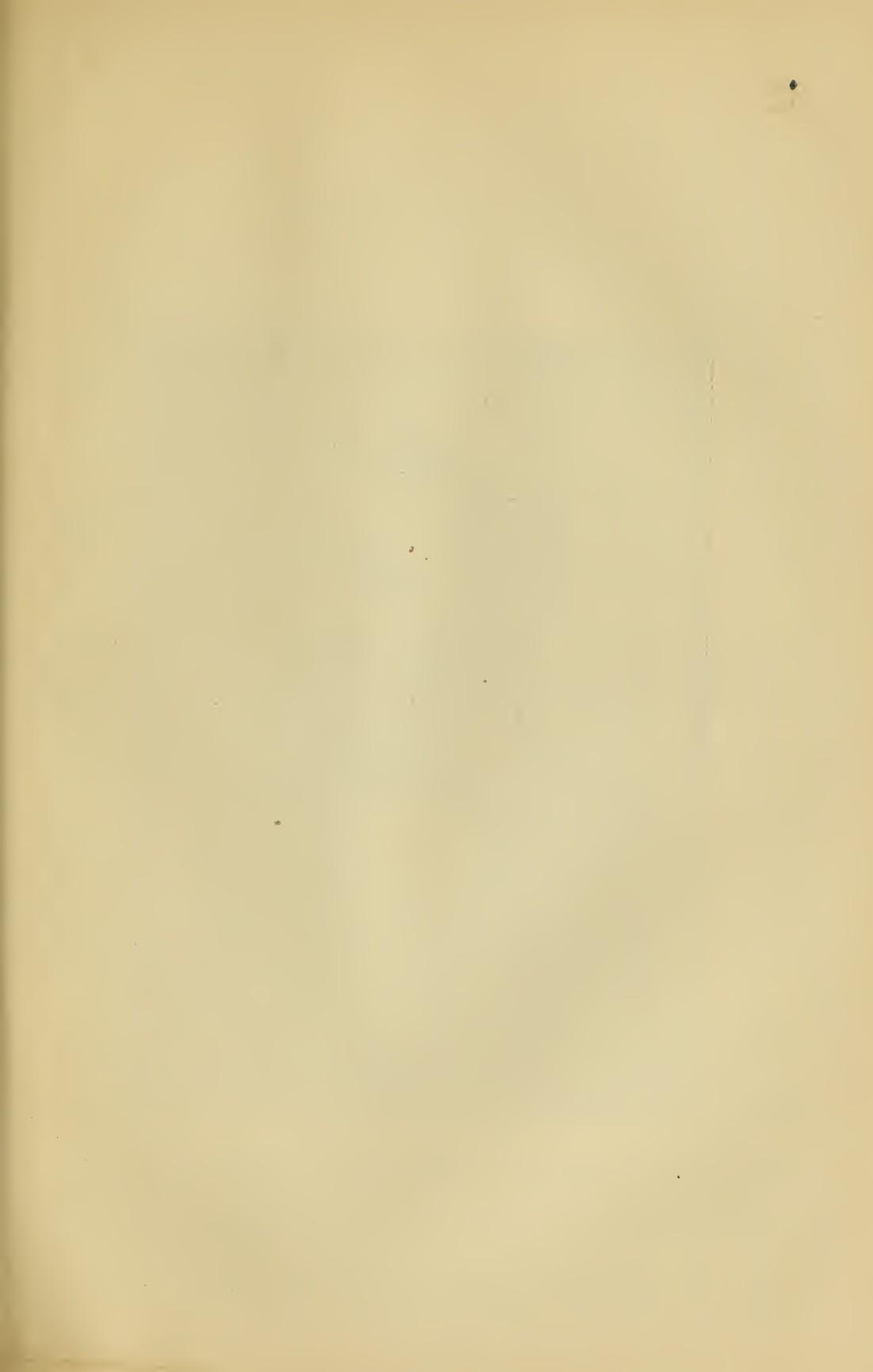
RESOLUTIONS.

Moved by J. A. Morton, seconded by John Croil, That the Fruit Growers' Association of Ontario desire to express their appreciation of the kind attentions and courtesies extended to them by the Press of the city—Carried.

Moved by P. C. Dempsey, seconded by M. Pettit, That the Fruit Growers' Association of Ontario feel themselves under obligation to the County Council of the County of Wentworth, for the kind use of the Court House and rooms afforded them; and that the thanks of this Association be tendered the Council for their courtesy, and that a copy of the resolution be conveyed them through the County Clerk—Carried.

Moved by J. A. Morton, seconded by Secy. Woolverton, That the matter of the preparation of lists of apples for cultivation in this Province, be referred to a committee consisting of the Directorate—Carried.

Moved by M. Pettit, seconded by A. D. Lee, Resolved, that this Association do memorialise the Ontario Legislature, and urge upon them the necessity of enacting such laws as would encourage the protection of existing forests, and further assist farmers and others in planting shade trees as wind-breaks—Carried.





WM. SAUNDERS,

President 1882-1885.

SUMMER MEETING.

The Association held its Summer Meeting at Cardno's Hall, Seaforth, on Wednesday and Thursday, July 3rd and 4th, 1889.

In the forenoon the delegates were driven to the residence of Mr. Robert Gouinlock, where his grapery and farm were inspected. After lunch the delegates met in the hall.

President Allan appointed the following Committees:

On Fruit—T. H. Race, Mitchell; A. H. Pettit, Grimsby,

On Lists of Fruit—P. C. Dempsey, Trenton; Thos. Beall, Lindsay; P. E. Bucke, Ottawa.

Mr. M. Pettit, of Winona, read the following essay on

GRAPES FOR HOME USE, METHODS OF CULTURE, ETC.

The vine besides furnishing such delicious fruit, adds greatly to the attractiveness of home, even the name "vine-covered cottage" or "vine-clad hills" suggests that which once possessed can never be forgotten. The inhabitants of the vine districts of Europe plant vines wherever they go, you can almost pick out their homes here in our country.

The value of the grape and the ease with which it can be propagated, are two points not yet well understood by the farmers of our country.

No fruit is more refreshing and none more healthful. How much is it worth to have all of the grapes one wants for himself, his family and his friends, for even three months of the year, and is within the reach of nearly every man who owns an acre of land in Ontario. Some parts of the country are so favorable to this industry that success comes almost without an effort, but people are slow to learn that it may be carried on successfully almost anywhere. To profitably grow grapes for market only a few varieties are required, and to name those varieties suitable to all locations is a difficult question, as a slight difference in location, soil or culture will produce results so widely different.

The culture of no fruit perhaps gives rise to a greater variety of opinions than that of the vine. For this reason it is safer for those who intend planting to find which varieties succeed best in their own locality.

However, for market I would select the following varieties in the proportion to 1,000 vines: 100 Worden, 200 Concord, 100 Wilder, 200 Lindley, 200 Agawam and 200 Niagara.

Some may say, why are Delaware, Brighton, Salem, Moore's Early, or Pocklington, not included for the following reasons: Lindley will produce more to the acre than the Delaware, ripens at the same time and is more saleable, it will produce as much as the Brighton, and improve by hanging when fully ripe, while the Brighton fails in both color and flavor.

The Lindley and the Agawam fills the place of Salem in the market, are as productive, and not as subject to mildew, or liable to burst with rain. Moore's

Early can only be made to produce one-third of as much as Worden, and is not as good in flavor. Niagara fills the place of Pocklington in the market and is more productive.

There is little profit in testing new varieties, let others do it for you. We frequently hear the remark, that grapes can be profitably grown at one cent per lb. This entirely depends on the cost of production, which is a very important question with the grape growers, as we must admit that the days of strong demand and high prices are past, that the market is frequently overstocked, and prices rule very low. To profitably meet this it is important that we should carefully consider the cost of production.

If we get 3 cents per lb. for a crop and it costs $2\frac{1}{2}$ cents per lb. to grow and market them, there is little more than amusement in the business, but if we reduce the cost of production 1 cent per lb. that would give \$30 per ton clear profit.

Grapes like all other fruit, can be produced at less expense on soil that is easily cultivated. This makes the selection of a site for a vineyard important, when we consider the fact that the soil will be cultivated constantly for 30 or 40 years. Hill sides should be avoided or any situation that has much descent, as the yearly waste of the continually cultivated land will carry away the surface soil from the high points and deposit it at the bottom where it is least needed. Cultivation that is generally given to secure a good crop of corn or potatoes will place the soil in a suitable condition for planting grape vines. When preparing to plant make a trench where each row is to be placed, by ploughing two furrows throwing one each way, in the bottom of this trench make a deep furrow with a subsoil plough or what will answer as well, take the mouldboard off of an ordinary plough. Then plant two varieties in the same rows, a red and a black, or a white and red, or an early and late variety, six or seven feet apart in the row. By so doing, at the end of five years, when we will know much more about the market for grapes, you can have the privilege of choosing which variety you will keep and cut out the other when it has amply repaid you for the very little extra expense, as no more land, cultivation or trellising is required.

Do not place any manure or other fertilizer in contact or near the roots, thousands of vines are killed each season by doing so. After placing a few inches of fine soil about the roots tread it firmly, then more earth and tread again ; this firming the soil in planting is of vital importance.

After planting give good clean cultivation ; for cleaning and mellowing the soil, no implement answers better than a gang plough with about 2 feet long bar of iron bolted on the plough-head and braced from each side filled with holes so the clevis can be set to plough to or from the vines. By using short whiffletrees nearly all of the ground can be stirred.

Plough well to the vines not later than August so the earth will become well settled to protect the roots from frost during winter. Allow no brush, rubbish, prunings, or anything of that description to accumulate about or near the vineyard. By burning everything of this kind you will keep your vineyard free from *thrip* and other injurious insects.

The question of pruning is a very unsatisfactory one to discuss on paper, no rules can be laid down that will profitably apply in all cases. So much depends on the strength of the vine, the age, variety, amount of vitality, whether it has carried a heavy crop the previous season or a light one, strength of soil, etc. As a rule too much wood is left. It is common to err in this direction ; the haste to get fruit quickly and plenty of it, are the chief causes of many a failure ; vines are allowed to overbear especially when young. The demands of the fruit exceed the

ability of the vine to supply them. The consequence is the fruit is late in ripening and a poor sample. The bearing canes for the next season's crop are not ripened nor the fruit buds matured, and it requires a year to recuperate.

Whoever attempts to confine the growth to some particular system does so at a loss. Systems may answer for a garden, but in growing grapes for market, prune out the poorest wood and save the best wherever it may be found. The more I look about and see the results of different systems of pruning the more I become convinced there is no science required, but simply to cut away enough of the vine to prevent overloading, leaving enough well matured bearing-wood to carry a fair crop, which on an average vine at full bearing is from 50 to 60 buds on the wood of the previous season's growth. To do this properly requires some experience joined with common sense.

In concluding I would say that I am of the opinion that if the people of our country could be induced to grow and eat more grapes, make and drink plenty of pure *home made* grape wine, it would be a greater step in the way of advancing temperance than the Scott Act or any other legislation can bring about.

In answer to questions, Mr. Cline stated that he did not think the Lawrence plum was so good as some others. The Niagara is a little earlier than the Bradshaw's. The General Hand is a very profitable plum. The trees will run from six to ten baskets each every year. The McLaughlin is a very fine plum, but not sufficiently so for a cropper. The curculio is decreasing with me. Paris green is my cure. Moore's Arctic ought to very far north where they can't grow anything else. It is nowhere compared with the Lombard. Referring to a recent article in the *Horticulturist*, he said, a pound of Paris green to a hundred gallons of water was too strong, and would destroy the foliage of the trees.

Mr. A. M. SMITH.—The Munro Egg escaped the black knot entirely. It might be valuable for sections where the black knot is found.

Prof. SAUNDERS.—If Paris green is not kept agitated it might destroy the trees, even by using four ounces to a barrel of forty gallons, it gets so strong.

Mr. E. D. SMITH.—I can corroborate what Mr. Cline says.

Mr. RICE.—Prof. Cook, of our university, has made very exhaustive experiments in spraying trees, and says London purple is much better than Paris green, without the danger of killing the leaves, unless you get it too strong. He recommends half a pound to a hundred gallons of water. He says the bees are the best friends of the horticulturist, and the spray is not to be used till the trees are so far out of blossom that the bees have left them. Mr. Willard, of Geneva, recommends planting plum trees in the apple orchard, because the curculio likes the plum better than the apple. Fruit growers would thus concentrate the curculio so as to fight him right on his own ground.

Mr. PATTERSON.—After experiments with Paris green on apple trees, beginning with five ounces to forty gallons of water, I found that three ounces answered better than a larger quantity, by constant stirring. It might possibly be reduced still more. It is a decided benefit to apples. I have experimented by spraying half the orchard and leaving the other half unsprayed, and I have found there is at least fifty per cent. difference in quality and quantity in favor of the Paris green. I have not found the slightest danger, I have had cattle pasturing in the orchard a week after spraying without the slightest ill effect. I used hyposulphite of soda along with Paris green, putting eight ounces of the hyposulphite to forty gallons of water, and that year I had no apple spot at all; but it was not general in our part of the country, and I can't say it was entirely owing to the hyposulphite.

Prof. SAUNDERS.—I would not recommend London purple as a substitute for Paris green, for the latter is of more uniform strength, while I have found a difference of more than half in the arsenic contained London purple. Further, the arsenic is in a more soluble condition than it is in Paris green.

Mr. BEALL.—I think the difficulty often is in using too little water. I always use half a teaspoonful to a pail of water; not more than half an ounce to a pail.

Prof. SAUNDERS.—That would be half a pound to a barrel.

Mr. PORTER.—What is the earliest time that it is safe to put Paris green on the blossom?

The SECRETARY.—Within a week after the fall of the blossom. There is no necessity to spray apple trees with Paris green while they are still in bloom. After the blossom has fallen it is quite early enough, and then we are quite safe from injuring the bees. I believe plums might be sprayed even before the blossom is out, as it is the parent curculio we want to destroy. So that in both instances we can apply the Paris green without danger to the bees.

Prof. SAUNDERS.—I should not agree with the secretary in applying Paris green to the plum before it blossoms. In the first place it has not yet been shown how Paris green acts upon the curculio in the case of the plum; whether it kills the curculio or deters it from operating on the trees, from the fact of containing something that the curculio objects to. It is believed that insects have a sense analogous to smell, and that they were attracted by some odor or exhalation from the plant which leads them to travel in that direction till they find a food plant. In that case it may be that the curculio is not destroyed by the Paris green, but merely deterred from the trees that have this protective coating. Did you ever find the curculio killed from the spray of Paris green on the plum trees?

The SECRETARY.—I have it from very good authority, that it is the curculio itself that we wish to destroy, and that by spraying the leaves of the tree upon which he feeds he is destroyed.

Prof. SAUNDERS.—In my experience the curculio does not feed much at that particular time. I have occasionally found punctures on the leaves, but I never found them to be eaten to any great extent. Their jaws are not mandibles. If they eat anything it is by sucking the leaves; and I think the probability of their eating the leaves is very remote. I think it is sufficient to spray the Paris green just as soon as the young fruit begins to show. They begin to operate very quickly on the fruit, but not before it is large enough to be seen as a newly-formed fruit. I have never seen anything to lead me to suppose that the curculio acted on the blossom before the bloom was formed.

Mr. McMICHAEL.—Would there be any chemical affinity in mixing sulphate of soda and Paris green, and destroying the fungus and the codling moth at the same time?

Prof. SAUNDERS.—I could not speak of that positively; but my impression is that the hyposulphite would not effect the strength of the Paris green solution in any way or make it more soluble. A little ammonia will make Paris green more soluble, and make it very injurious I should think, to vegetable tissues.

Mr. PATTERSON.—I have used both the hypo-sulphite and the green in the same barrel, and I found the Paris green acted as well as it has ever acted with me; and that year I had no apple spot, I cannot altogether attribute it to the hyposulphite. I have had greater success when I sprayed the earlier apples a few days earlier than late varieties. Select the time just after the apple is formed,

as long as the apple is upright. In a short time it will turn down. You cannot have such good results after that period as before. Where you have the time it is advisable to spray your orchard twice.

The SECRETARY.—I have just remembered my authority for spraying the plum before it blossomed—it was Henry Comstock. It accords with my own experience, because in those seasons where I have applied the Paris green to the plum trees early there has been success, and where it has been delayed until after the young plums were formed, there has been failure.

Prof. SAUNDERS.—It does not seem to be a matter of any importance except as touching upon that bee question.

After some words of congratulation from Mr. Rice, of Michigan, Sheriff McKellar was called in by the President to say a few parting words. He expressed his great pleasure at being present. Referring to the presence of Mr. Rice, he said Canada would like to annex the United States, and take in such men. He wished for freer trade between the two countries. We have no reason to fear competition with them in fruit; but besides that, they are our own kith and kin, and the closer our relations the better for us financially and otherwise. Instead of putting up barriers against one another we should cultivate the most friendly relations. Intercourse has done a great deal to remove prejudice. He had spent last winter in Florida, and he brought with him some specimens of the products of that country. [The Sheriff exhibited some curious specimens, chief among which was the material used for building, being a peculiar mixture of gravel and shells, which grows on the sea shore.]

Mr. P. C. DEMPSEY moved, seconded by Mr. Pettit, that the Fruit Growers' Association of Ontario feel themselves under obligation to the County Council of the County of Wentworth for the kind use of the rooms afforded them; and that the kind thanks of this Association be tendered the County Council; and that a copy of this resolution be sent them through the County Clerk. Carried.

After thanks to the press, moved by Mr. Morton, seconded by Mr. Croil, the convention adjourned at six o'clock.

REPORT OF FRUIT EXHIBITED AT HAMILTON MEETING.

Your Committee have to report that they have examined with a good deal of satisfaction the following list of fruits, namely:—Good specimens well preserved of the Baldwin, Seek no Further, Wagner, Canadian Red, Greenings, Bourassa, Northern Spy, Blue Pearmain, Vaudevere, Mann, Cooper's Market, Cranberry Pippin, Red Mackintosh, Golden Russet, Bellflower, Red Pound, Pewaukee King, Ben Davis, Blenheim Orange, Cayuga Redstreak, Ontario, Walbridge, Maiden's Blush, Alexander, Swaar, Fallawater, Grimes' Golden, Hastings, Tallman Sweet, Fall Pippin, Twenty-ounce, and Swazie Pomme Gris. We note with much pleasure that a number of the fall varieties have been kept until this date in a good state of preservation showing that the season of many of our fall varieties may be considerably extended by proper storage. Among the newer varieties P. C. Dempsey, of Trenton, shows a number, as follows: Adams' Pearmain, Bonum, Lord Burley, Golden Winter Pearmain, Hardadsts' Pippin, Start's Golden and Cellini. Of these, Lord Burley is an apple of medium size, color red, with russett dots; quality good. Bonum, a small dessert apple, color dark red, with russett dots; texture fine, quality medium. Hardadsts' Pippin, size medium, color yellow, splashed with red; quality medium. Start's Golden, small dessert apple, color yellow, of fine quality and handsome appearance. Cellini, an apple of fair appearance but poor quality. In addition to these apples, Mr. Dempsey shows a specimen of the Duchess de Bordeaux. This is a long-keeping variety and will not be in season till March.

A very excellent specimen of Golden Russet was shown by Mr. Taylor, grown in Mariposa. John Leonard shows a handsome specimen of seedling, not unlike King, but quality very poor. There is also a seedling from Humberstone township, county Welland, origin unknown; a large apple somewhat like King, but of finer quality and a better keeper. The tree is said to be a strong grower and very productive. L. Woolverton shows a collection of 15 varieties of apples, very fine specimens and all well kept.

E. C. Fearnside, of Hamilton, shows six varieties of the standard sorts, most of them fine specimens and well preserved. A very fine plate of Perry Russets was also shown by Mr. Holton, of Hamilton. A seedling shown by Joseph Dunn, of Orillia, is judged by your committee to be a seedling of the Fameuse. The apple is about the size of the Baldwin, more light colored, and in flavor distinctly Fameuse, and is worthy of being watched, and if found a good grower and productive, should be propagated. Three varieties of grapes are shown by M. Pettit, of Grimsby, Rogers No. 4, Salem and Vergennes. The first-named picked on October 1st and left in open baskets, retaining its flavor well and is but slightly shrivelled. Salem, picked September 5th, kept in open baskets, is as firm and plump as when picked, and in quality far ahead of the imported Spanish varieties. Vergennes is in an excellent state of preservation, quality first-class.

All of which your committee respectfully submit.

W. E. WELLINGTON,
A. ALEXANDER,
T. H. RACE.

Dr. HANOVER.—Would you remove the vine in the fall from the trellis, and protect it with straw or other material?

Mr. PETTIT.—That entirely depends on the locality. In our section we leave them on the trellis all winter; but in colder sections, where the wood winter kills, it would be necessary to put them down.

The PRESIDENT.—What is your experience with summer pruning? Some people think it is necessary to cut back very heavily for the purpose of ripening the fruit, as they say.

Mr. PETTIT.—I have practised it, and left the vines without, and I think there is very little difference. But where vines make very rapid growth, like Rogers 9, 3, and some of those, it is better, after they have made a growth of about three or four feet, to pinch the ends off. I don't think it advisable to go through and cut off much; and some vineyards that are not touched at all with summer pruning yield just as well as those that are summer pruned. One thing that is very necessary, after vines have made a growth of a foot, or even less—varieties that throw out a good many suckers from the old wood, like the Champion, or some very hardy kinds,—to go through and break out a lot of these. Where the bud throws out two shoots, break out the weak one that comes out back of the main bud. Thus you get a better sample of grapes, and nearly as much fruit.

Mr. BUCKE.—Don't you find the new wood blows off a good deal if not tied?

Mr. PETTIT.—They soon catch hold if you hook the leaf on the wires: Where the bearing canes come straight up, then a heavy shower will break them down sometimes, especially the Niagara. For that reason we run Niagara canes horizontally on the wire instead of bringing them up straight.

The PRESIDENT.—Why have you in your vineyard only 100 Worden and 200 Concord, when the Worden is spoken of lately as being the more profitable grape—bringing a higher price than the Concord because it is sweeter, and because it is called for?

Mr. PETTIT.—The Worden is not nearly as good a shipper as the Concord. It bursts very easily; and there is a good deal of complaint, in my experience, on account of its coming through in bad condition; and it is not as long a keeper as the Concord—it gets very soft. Aside from that I think it would be more desirable. I get more per pound for the Worden than the Concord. I don't get as many pounds per vine. The Lindley is almost as early as the Worden.

Mr. BUCKE.—In the Otrawa District we look upon the Brighton as the leading grape—the bunches are so large and beautiful, and it is earlier than many. It would beat the Lindley every crop, for pounds.

Mr. A. H. PETTIT.—The Brighton succeeds very well with me on gravelly soil.

The PRESIDENT.—What varieties do best in this district?

Mr. GOUINLOCK.—I find the Rogers the best. The Lindley and the Roger's 3 have the highest canes and show the most fruit.

Mr. BUCKE.—Which grapes did you make best out of last year?

Mr. GOUINLOCK.—The Rogers.

Mr. PETTIT.—In any case there should not be more than forty or fifty buds on a vine that is full bearing, even supposing it had been bearing ten years.

Mr. BEALL.—It is very difficult to make people understand that the old vine should not have any more buds than a new vine.

Mr. PETTIT.—Less if anything.

Mr. BEALL.—The vine can only produce in proportion to the area of land it is on. You do not increase the space, and you should not increase the bud. Forty or fifty buds to the vine are enough to grow ten or fifteen tons to the acre if you have good luck.

Mr. PETTIT.—Ten to fifteen tons to the acre are something we hear of, but seldom see. When you get five tons to the acre you are getting a pretty good yield. Mr. Hogan, of Oakville, in his evidence before the Agricultural Commission, gave twelve tons to the acre, but it is something extraordinary if a man gets anything near ten tons, I should say.

A. H. PETTIT.—How many tons to the acre do you call a good crop from your vines?

Mr. PETTIT.—I never measured the ground as it is planted, and scarcely know, but I think ten by twelve requires something in the neighborhood of 430 odd vines. Well, if you get an average of twenty pounds to the vine, you are getting all that you can grow on them. All that you are getting, as an average, over that, you are taking out of your next year's crop—unless you have got a very strong growing vineyard, a soil very suitable, and everything in that way.

A. H. PETTIT.—If you plant ten by twelve and plant eight by seven, and reserve forty buds, won't you double your crop?

Mr. PETTIT.—You might for a season or two, while the vineyard is quite young, get more to the acre, but you lose just that amount in a few years when your vines get older. You can't produce so much with them close. The first vineyard I planted I put Concords nine feet apart, and a year or two ago we cut out every other one, I found they were not doing well, and I think I will get just as much from the same land from half the number of vines.

Mr. BUCKE.—How many buds do you leave on this year's wood after you prune in the fall, on each cane?

Mr. PETTIT.—From four to eight.

Mr. BUCKE.—In Ottawa we leave only two buds, and we get a good crop.

Mr. BEALL.—I had no intention of saying a man could grow ten or fifteen tons to the acre; but I said that you had buds enough to grow that much if you had good luck to do it; but I don't think you will have the good luck. I don't think any man ever raised fifteen tons to the acre. The most I ever got was 35 pounds to the vine, some eight or ten vines in a row.

Mr. BUCKE.—There is nothing better than earth to protect vines in winter ; and we never use anything else in Ottawa. If any one will bury a potato in the ground in our climate, and put three or four inches of earth over it, in the spring he will find it has not been touched with the frost at all. If he took it up in the winter he would find it frozen solid, but the frost is taken out so gently in the spring that it does not injure the potato. So it is with the vine. If you put straw or anything of that sort on the vines there is also a danger of mice or animals of some kind.

Mr. RACE.—Is not the snow sufficient of itself ?

Mr. BUCKE.—No, it wants soil.

The SECRETARY.—I should think Mr. Pettit's mode of pruning, though it works very well in our section, where it is not necessary to lay vines down, would not be so suitable where the vines have to be laid down.

Mr. PETTIT.—No ; Mr. Beall's system would be better.

The PRESIDENT.—Will Mr. Beall explain his system ?

Mr. BEALL.—I use only one arm. I cannot see there is anything gained in using two arms of a cane. They only reach half way to the next vine, if you have two arms, five feet each ; you get just as much wood with one arm ten feet.

The SECRETARY.—The extremities are not so near the root.

Mr. BEALL.—That does not make so much difference, because when the vine is properly established you can grow the same quantity of fruit from end to end. I have satisfied myself that there is not the slightest necessity whatever to have the crop at the outer end of the vine ; you can have it evenly distributed from the base of the vine to the top ; and by growing one arm you have no trouble whatever in laying them down ; they are all laid down in a row, one following the other right along. My man and myself can lay down and cover three hundred vines in a day. I stand on the body of the vine—that keeps the vine down ; and I have an ordinary lath four leet long with a crotch in the end, and I have only one arm, but on that arm there are often four or five or six oblique arms, but those have perhaps only six or eight buds on them ; these oblique arms are renewed every year or two—sometimes there may not be more than three or four on, but those will all follow along the same line, reaching along the wire. The man will follow on, and throw a little clay on ; and I find the least possible quantity of clay succeeds the best. I do not care anything about covering the arm itself ; it is only the young buds ; and that will keep down sufficient.

The SECRETARY.—You do not cut all those oblique branches back every year.

Mr. BEALL.—Those are renewed at irregular periods ; sometimes I let them run two or three years. I do not think I let any of them grow more than three years, then on those of course I grow buds. I try not to have more than fifty buds on each vine ; and on the Niagara vine every bud should produce a pound of grapes ; that will be fifty pounds to the vine. I don't say I succeed in doing it very often. I think it can be done, but I am not clever enough.

The SECRETARY.—How far apart would you have these oblique branches on the main arm ?

Mr. BEALL.—Sixteen or eighteen inches apart.

The SECRETARY.—And the main arm you run ten feet from the root ?

Mr. BEALL.—The main arm would run nearly to the next cane, and then the last oblique branch would run away over the other cane. The first from the base would of course run in the same direction, but under the other one. I never mutilate this main arm, except when I meet with an accident.

Mr. BUCKE.—You pinned down the oblique branch to take its place?

Mr. BEALL.—No. If one should happen accidentally to be in the right place I will leave it. In pruning we should have two objects; one, to grow bearing cane for next year, and the other, for bearing cane this year. We want always, in pruning, to look out for renewal canes, but not cut out the oblique arms that they protect. I would rather have a new cane any time than an old one.

The SECRETARY.—Have you ever tried the Kniffen system?

Mr. BEALL.—I consider this a combination of the Kniffen system and the Fuller system and every other system, because I adopt from every system. We have the spur system complete, then we have the renewal system complete.

Mr. GOUINLOCK.—How do you manage to cover the new wood; or does it stand.

Mr. BEALL.—No, it will all lie flat on the ground. The cane will twist over on its side. The cane of course is as large as my arm in some places. It requires very little clay; your canes have got used to it; they are always growing in this oblique direction. The arm itself is grown on the lower wire altogether.

Mr. PETTIT.—Very close to the ground?

Mr. BEALL.—Well, I would have the wires closer than I have mine. Mine are fifteen inches from the ground, and I fasten the oblique canes to the wires four or five inches—I find it is better, the nearer I can get them to the ground, so long as the grapes do not touch the dirt.

Mr. DEMPSEY.—The renewal system and the spur system, it seems to me, are badly mixed with Mr. Beall's explanation. With the spur system properly understood I have grown vines fifteen feet long, and produced fruit just as even at the base as at the extremity. There is no difficulty in doing it with the spur system. Every man producing grapes under glass is adopting the spur system. They prune the vine clean, and depend on the dormant eyes that are right at the base of each bearing shoot, for the next year's crop; and those vines are invariably grown at an angle of 45, so that they are easily laid down and raised up; and in the spring of the year, when you have discovered the place that appears to be slowest about starting the vine, you raise that portion and lower the rest of it. If the extreme end of the vine has taken to throwing out shoots vigorously, bring that close to the ground, and raise it where the shoots are not coming out vigorously; and then you cause the whole vine—to use a grape-grower's term—to "break" evenly. In combining the renewal system—from which we invariably get better bunches than by any other system that ever I saw—with the spur system, and leaving little shoots only about from four to six inches long, containing one bunch, clear from the base, and we can continue to renew that little spur, and we can maintain those old buds for years, for an indefinite period if you like. I have had them four inches in diameter and fifteen feet long, and kept on right year after year for twenty years, producing a good crop of fruit every year, and breaking even from one end to the other, where we had not only to bend them around, but to twist them clear around once to get them down. The very system we practice under glass for cultivating grapes will do out of doors, but I like Mr. Pettit's system of pruning on two wires from the

horizontal arms running along both ways, or one way, if you like. We practice that because it saves a very large amount of labor in the summer. Going over a few acres of grapes where you have to raise them to cause them to break even, causes extra labor and expense. We can raise up shoots from the ground and strip clear till we raise them to the wires, and have one to run to the right and one to the left, and two branches to the first wire about two and a half feet high, and two branches to the top wire about five feet high. The advantage of this system is that the fruit and the weight of the branch bends them over so that they are inverted, and saves a great deal of pinching.

JUDGING FRUITS AT FAIRS.

Mr. Thomas Beall, of Lindsay, read the following paper upon this subject :

HOW BEST TO SECURE UNIFORMITY AND FAIRNESS IN THE AWARD OF PRIZES AT FAIRS.

There are several obstacles to be overcome before this most desirable object may be attained. Most of the Boards of Directors of our Agricultural Societies regard the exhibition of fruit at their exhibitions as a matter of the least importance. Indeed it is generally tolerated only because public opinion demands it, therefore the preparation of the prize list and the appointment of judges, the two most important matters in connection with this department of their exhibition, receive but little care or intelligent thought from them. "Uniformity and fairness" can scarcely be expected at any exhibition where such views are held.

The prize list for the numerous township and county exhibitions throughout the Province are all similar in character, almost the only difference being they are made longer or shorter to suit the amount of funds assigned to this department by each society. One of these lists is now before me from which I will take a few lines. "Best assortment of apples, not more than twelve varieties, five of each," but it is not stated whether they are to be summer, autumn or winter varieties. After giving a number of varieties of autumn apples I find "any other variety of fall apples," but there is no hint given whether they are required for dessert or for culinary purposes. A number of winter varieties are then named, concluding with "any other variety of winter apples." And again there is no indication as to the purpose for which they are required, whether for culinary use or for the home or foreign market. "Uniformity and fairness in the award of prizes" can hardly be expected under such circumstances.

With reference to the appointment of judges in this department the idea generally prevails with boards of directors that anyone can judge which of a half-a-dozen plates of apples of the same variety is the best, and as this is all that is required of judges (as they suppose) they cannot be induced to give the subject further consideration, therefore "any one" is chosen for that purpose. The result of such carelessness in conducting a fruit exhibition becomes fully apparent when the judges have completed their work and the public—the exhibitors and their friends—are admitted to the "show." The public, in the aggregate, are pretty good judges of a fruit show and they are not backward in giving their opinions freely when gross errors have been made. The blame is invariably placed on the judges, where, no doubt, it often belongs, but not always, for the wording of the prize list is often so ambiguous that the cleverest expert might be nearly as far astray.

A few instances which have come under my own observation will show how uncertain an exhibitor must feel as to his chances for obtaining prizes. Prizes were offered for "Swayzie Pomme Gris." Many plates were exhibited purporting to be of that variety, but all, with one exception, were little, half-developed Golden Russets which were awarded the first, second and third prizes between them. There was one plate, however, of Swayzie

Pomme Gris on the table, and they very good ones, but they were not awarded any prize. Prizes were offered for "Grimes' Golden." Two plates of that variety were on the table, one of which, an excellent sample, was awarded third prize, the other plate got nothing. The first and second prizes were awarded to plates *not* of that variety. At another exhibition the first prize for "any other variety of winter apple" was given to a plate of Alexanders and the second to a well kept plate of Duchess of Oldenburgh. There is much difference of opinion respecting the "season" of this variety. The judges in this case, who were three in number, declared it to be a winter variety; perhaps they were right. The list also called for "dessert apples for winter use." There could be no mistaking the wording of the prize list in this case. On the tables there was a very good display of winter apples. Competitors for these prizes: Golden Russets, Kings, West-field, Seek-no-further, Wagner, Northern Spy, Grime's Golden and others. Several of these may fairly be claimed as dessert apples, but the three prizes were awarded, first to Alexander, second to Pumpkin's Sweet, third to Colvert. Evidently the judges thought that if the largest apples on the tables were not the best "dessert apples for winter use" it was not their fault.

On another occasion a sort of sweepstake prize was offered for the "best plate of winter apples on the tables." Knowing this special prize was offered, I had some curiosity to know to what variety they had awarded this prize and was much surprised to find it given to a plate of Tallman Sweets, specially so as there were many excellent varieties of winter apples on the table, notably some of the finest specimens of Golden Russets I had ever seen at any exhibition. Having an opportunity subsequently, I asked one of the judges why they had selected the "Tallman" as the best winter apple on the tables. His reply was, "because we believed the Tallman Sweet to be the best apple grown in this or in any other country." That answer was quite satisfactory, of course.

At one exhibition where a prize of \$10 was offered for the "best collection of apples, correctly named, five of each variety and not less than sixteen varieties," it was awarded to an exhibit consisting of some twenty or twenty-five varieties and all *named*, viz., names were attached to each variety. There were not more than ten tolerable specimens in this lot and only four of these correctly named. More than one-half of the lot were nondescript seedlings without sufficient merit to be allowed a place in any sensible man's orchard. One of the three or four lots competing contained sixteen varieties, and all, with one or two possible exceptions, correctly named. The varieties were good and the samples well grown. The judges evidently awarded the prize to the lot having the largest number of names attached without regard to any other consideration. Can "uniformity and fairness in the award of prizes" be expected under such management?

But there can be no improvement in this respect as long as the present system of appointing *three* judges to act together in each division lasts. This system is bad in every respect. The judging of fruits at exhibitions requires the best horticultural skill that can be obtained. The idea which guides the boards of directors seems to be that by appointing three persons, each having a very little knowledge of the subject, the concentrated wisdom of the three is more than equal to that which may be obtained from one expert. But experience shows this is not the case. The judgment of the best of the three is often cancelled by the ignorance of the other two, and it frequently occurs that the most ignorant one of the three, who generally has the stronger will, gets everything his own way. When some gross error is quietly pointed out to one of the judges the reply is almost invariably, "Oh, I knew it was wrong and would have had it otherwise but you know I was only one of three and the others were against me." If either of the other two are spoken to the reply will be substantially the same. This system is unjust to exhibitors, to visitors and to all others concerned, and must be swept out of existence. Let the directorate appoint only one judge in each class or division and hold that *one* responsible for his work. Fewer mistakes will then be made and these more easily corrected.

The issuing of an intelligible prize list and the appointment of one expert judge only in each class will go far towards securing "fairness" at our exhibitions, but "uniformity" may not be secured until the judges can be supplied with some uniform standard of quality for all purposes, for all our fruits wherever they may be grown, without regard to

soil or situation ; and I would urge in the strongest terms that this association do at once cause to be prepared a catalogue of all such fruits as are generally grown in this province, and that it be so prepared that all the varieties, and of every kind, are compared each with the other for all the purposes for which such fruits may be grown. It will require much labor to prepare such a catalogue, but the labor and time required should be no obstacle to prevent the work being thoroughly done. This Association is largely subsidized by the Ontario Government for the purpose of giving all possible assistance to the public in fruit culture. The public, therefore, have a right and do claim such a catalogue at the hands of this Association, and I have no hesitation in stating, from enquiries frequently made of me at exhibitions, that no other work which the Fruit Growers' Association of Ontario, can perform will be so acceptable to the tens of thousands of fruit exhibitors throughout the Province as the preparation of such a catalogue, for then obtaining prizes at exhibitions will no longer be regarded as a lottery, and exhibitors will soon learn that "uniformity and fairness in the awards of prizes" at our exhibitions has been secured.

Mr. MORTON.—I think the strictures in regard to the judges are a little too stringent. We cannot draw the line absolutely and say what apple is a summer or fall, and what is a fall or winter apple. Some come so near the border-land that it is a matter of opinion how they should be classed. I was a judge at a fair where we gave the first prizes for the best six fall apples, and the best six winter apples, to two collections which both had King of Tompkins County in them. We began with summer and went to early winter ; and then we went from early winter till the conclusion of the season. We cannot fix the date in one locality as we can in another. A judge from the south cannot draw the line for a northern county, because he does not know when those fruits would mature in that section. I have known a judge at one fair call a fruit Primate apple, and at another fair he said it was not Primate. We are all liable to mistakes. I don't think those small foibles should be pointed out. The thing that should be done is to get out a complete classified list. It would be useless repetition to divide the list into home and foreign. The same apple might be entered as home, foreign and dessert; and there are some dessert that are good for cooking. The list would be rather bulky to divide it into those classes. Some move should be made so that judging could be done by some common standard.

A. H. PETTIT.—There has to be wide scope allowed in judging. If all exhibitors were educated up to the one-judge system, and the prizes being given by points, it would give satisfaction ; but it would be years before we would dare undertake it so fine as laid out in the paper read.

Mr. MORTON.—I approve of the one-judge system. Being secretary of our fair, I took the fruit department into special charge, and got Mr. Allan, the president here, as judge, and we have had him ever since, though there was some kicking at first. In the other departments we have not educated the people up to the one-judge system yet.

Mr. RACE.—Don't you often find exhibitors who say that Mr. Allan does not know anything about fruit ? (Laughter).

Mr. MORTON.—Yes, and we find such in every branch. You find people telling you, you don't know how to run a newspaper.

Mr. A. H. PETTIT.—If the judges could place on cards the value of fruit—their market value, and their value for production, and some points on which they base their judgment—why they discarded one and gave the prize to another—it would be a good thing.

The PRESIDENT.—If we as an association are to do as it is intended under the Act we are to do—educate the public in this matter—we must take a step in

advance. We have been standing too long in one spot. I am very thankful indeed to Mr. Beall for having the courage to write upon this subject. To a very large extent I agree with his paper. The system of judging has been terribly abused, not only in the east, but all over; and all who have had any experience in judging fruits at our exhibitions must agree with what Mr. Beall has said. The difficulty of course is to find the remedy—to lay down the set of rules for our guidance. I believe in the first place, that our exhibitions have done a good deal of harm to fruit culture generally, by offering prizes for large collections—of apples, for instance. It has induced the growth of a large number of varieties, that are quite unprofitable for home use or shipment. Then there certainly is an inducement to parties that are keen for prizes, to pick up a few varieties in the neighbors' orchards, if they have not enough in their own to make up the forty, or twenty, or ten varieties called for. We have often heard of such things being done. Men who are in the habit of judging at our leading fairs have tried to introduce judgment upon points, adopting a scale of one to ten, ten points constituting a perfect sample. The Bartlett pear, for example, would bear as a maximum ten. The Northern Spy apple, there might be a question as to it deserving the full ten for the perfect sample. What we mean by a perfect sample, is as to how it appears, both as to size, coloring, shape, etc. The only question that might detract from its ten points, would be its commercial value, it takes so many years to come into bearing; but in judging on the ten points we take into consideration the healthfulness or growth of the tree, its bearing quality, its use. If we are judging for cooking alone, we judge it in that way; so for dessert; and commercial value comes in where we look upon that particular fruit for home and foreign markets. We must make a combination of these points of excellence in judging at our fairs, if we are to do justice to our duty and lead the public to cultivate those qualities they should. Planters going to an exhibition for information, and seeing the prize ticket on a collection of perhaps twenty varieties, will naturally conclude to plant out an orchard from that standard. If the judgment of the judges has been improper, it is a serious thing for that man. That collection might perhaps be largely summer and fall fruit; and ten chances to one the commercial value is not there, simply because there is not a sufficient number of the standard winter fruit in that collection. The collection to be perfect, must extend over the longest possible season in that particular locality, and must contain fruit for dessert and for cooking in the different seasons. Then it contains those varieties for the various seasons that have the highest commercial value. You will have to look also to each sample, and see that they are perfect and properly named. I believe judging on points is the quickest and easiest way to judge, whether it is one judge or three; and the points awarded on each sample or each plate, should be written upon a large ticket, so that the owner can see what it is considered worth by the judge or judges. If a fruit is incorrectly named, and the judge knows what the name is, he ought to change that; and if that sample is in a collection, that collection is short one variety, if the lines are drawn very close. In our Goderich Horticultural Society, we drew the line closer from year to year, giving exhibitors notice, and doing what we could to get them educated into the proper naming of their fruits, so that in a few years they could bring ten, twenty, yes forty varieties of apples correctly named. When we got them to that state of perfection, and found that there was a mistake, of course we cut out the improperly named sample, and the collection was short that variety. It is impossible to give one scale of points, so far as seasons are concerned, for the whole Province. That will have to be a local matter to a very large extent; for you will find an apple that in one section is a summer apple, in another section is an early—or possibly a

late—fall apple ; and on the other hand, you will find varieties vary very much, a variety that here has no practical value in the local market, and is not esteemed for home use, in another section is esteemed highly, both for home use and home market. As to the one-judge system, I have advocated that for some time past ; in fact I have made up my mind several times not to act as judge at any of our fairs except alone. I want to be responsible for any mistakes three are that I make, and not blame it on the other fellows. It is almost universal—in the west as well as the east—to blame it on the other two.

Mr. GOUINLOCK.—I believe this one judge system will be the best, because a great many just leave it to one any way. If he is posted in the matter it is left to him, and he can get out of it by laying it on to the others if he has made a mistake.

Mr. STEWART.—I would favor the one judge system if the man is expert in the branch he judges in. I have seen less dissatisfaction with one judge than with three. Several of the local fairs here have appointed but one judge.

P. C. DEMPSEY.—I can fully endorse nearly everything Mr. Beall says. Our committees usually, more particularly in those great fairs we have in some places, like to select judges on account of their social or political position being high. Too often those men obtain the position because they can make the largest blow politically, and know the less about fruit, or anything else pertaining to the advancement of our country. (Laughter.) At one of our fairs, for the last fifteen years, there is always a prize offered for Beurre d'Anjou pears. They have always had the same two men judging, and they are both appointed on account of their high standing in life, and they are certainly, in their profession, very clever men. Invariably there is a Beurre d'Anjou on exhibition ; but the Howell pear got it. You could not get two pears as far apart in appearance. Those men awarded first prize for twenty varieties of apples to a collection containing several inferior local varieties unfit for home use or for market ; in fact, worth, commercially speaking, nothing ; while there were not less than ten superior collections for them to step over. Where we will get a remedy for this I can't understand. I am inclined to blame newspaper men. Why don't the press come down on such affairs ? Why is it that in the fruit department we must have men that don't know anything about it—though the same committee would not appoint for the live stock department men who did not know a bull from a cow ? Our press are to blame, because they are afraid to come down on those men on account of their standing in life. The first time I ever acted as judge of fruits, a prize was offered for a Pomme d'Or apple. Neither of the other judges, both old men and good judges, knew Pomme d'Or. It was ruled out. When the young man in charge of the department demanded of me why this was done, I told him there was no such thing in existence as Pomme d'Or apple ; that was only a synonym for another apple. I referred him for my authority to LeRoy's dictionary of Pomology. There has never been a prize offered on that variety since. The prizes for articles at many of our fairs are offered to please prominent men in the district who grow those things. In one case the Concord grape was left out, and a prize offered for the Isabella because a prominent man grew it. A greater difficulty than judging comes in in preparing the list ; it is prepared usually by men of little or no experience in fruit. I would much rather judge alone than with two others, because we usually have one of the two who is there judging for the first time, and we have to educate him out of thinking that he knows everything. The scale of points, as recommended by the President, involves a great deal of work, but the judge could get along in two-thirds of the time with the aid of a clerk. I favor the single-judge system.

Mr. RACE.—The scale of points is good, but the gist of the remarks made amounts to this—educate the people. As a newspaper man I came down pretty hard on judges who did not understand their business; and last fall I was frequently selected to go and fill those places I had condemned. At one place, out of seventeen plates labelled Wealthy and Wallbridge, I cast out eleven that were Colvert, or Canada Red. That resulted from dishonest agents who had gone through that section deceiving the people. This system of judging will have to be carried out till the people know one variety from another, and by adopting some universal scale of points, I think we will find the remedy for the many difficulties we have had in former years.

Mr. DEMPSEY cited a case where a man deliberately “fooled” the judges, and chuckled over it. In such a case he thought the exhibitor should forfeit all his prize money.

M. PETTIT.—Flavor should have greater prominence than size as an element in awarding prizes. At present the prizes often go the biggest articles, regardless of their quality,

Mr. RACE.—At one of the fairs where I judged I set aside a very large sample of the Alexander and gave the preference to the Cayuga Red Streak; and there was a great deal of fault found with me on account of the size and appearance of the Alexander. If we had had a scale of points we would have got out of the difficulty in that case. The Alexander has size and appearance, while the Cayuga Red Streak has quality, solidity and size. The people at the country fairs count too much on size.

A. H. PETTIT.—I would suggest that the prize cards be printed in this way : Commercial Value, 1 to 5 ; Productiveness, 1 to 5 ; Hardiness, 1 to 5 ; Perfection, of Growth, 1 to 10 ; correct nomenclature. Then every one would know exactly why the prize was awarded.

Mr. DEMPSEY.—That is a very important point indeed. We invariably take into consideration the market value, and this plan would show exactly what the value was. In judging fruit we need some character. Generally you will see the character developed in the skin; but we cannot carry that point very far, particularly in judging plates. In judging at the Provincial Exhibition we must remember we are judging for the Province of Ontario. Fruit from Owen Sound would not have color, while that from the Niagara district would be mature and well-colored. It is not so at the country fairs.

Mr. BUCKE.—What is “commercial value?” I have seen the Champion grape sold at a higher price than any other grape because it comes in early; and I have seen the Alexander apple sold higher than any other because it is large and well-colored. Is “commercial value” the price we get for the fruit?

Mr. DEMPSEY.—Last year the Golden Russet apple was worth just about half the expense of the barrelling, and the Alexander apple were clearing at the station at \$2 a barrel. There was commercial value of the Alexander over the Golden Russet certainly. The commercial value of the Alexander is always high. The Twenty-ounce Pippin possesses a very high commercial value; it keeps very well in winter. I have seen it kept away late this last winter, and commanding perhaps double what the Baldwins do. Now, the commercial value of the Baldwin stands high on account of its appearance, but, certainly, it is a very poor cooker; and who on earth wants to eat one? So with the Ben Davis; it is very high, and it is a fair cooker, but there is nobody that wants to eat it. So with pears. The Bartlett is the superior pear, but there are many varieties that I would rather eat that possess no commercial value whatever. The apple that stood highest this

last year commercially with us was the Snow, because they were not spotted, and we got them off our hands before the market was thoroughly glutted with fruit ; and the result was a little profit. This does not always occur. Next year we may get as big prices for our winter fruit, but, invariably, any long-keeping apple stands high commercially.

Mr. RACE.—You have given us to understand that the Alexander is a higher value than the Golden Russet ?

Mr. DEMPSEY.—Last year was an exceptional year.

Mr. RACE.—If the Alexander will bring a higher price in the market than the Golden Russet, then that is to be the relative commercial value to these others.

Mr. BUCKE.—I think the association should take the apple list and select five to ten varieties each of summer, fall and winter apples, and reject the whole list but those ten—let the others go to the wall. I do not think it is necessary to have more than ten apples for any one season. Then the judge should be governed by the consideration of the locality where he is judging. For instance, in North Hasting, where they cannot grow a Greening or a Baldwin, the Alexander would be entitled to five for commercial value, while the Greening and the Baldwin would not be entitled to anything. How are we going to get at the commercial value of apples to suit every part of the country unless we localize them, and it would entail a great amount of labour that would be perfectly useless when you got it done.

The PRESIDENT.—In judging of commercial value we look upon those varieties that are grown more generally, and that have, the country over, a more general reputation. Hence the number of those varieties is very few.

Mr. RACE.—Let the market itself regulate the commercial value.

The SECRETARY.—It will be a valuable feature of our report for 1890, to have this discussion given broadcast over the country. If a good scale of points is prepared by this committee and approved by this association, it would be a most valuable thing to distribute to the different fair managers and secretaries throughout Ontario ; and I would suggest that it be printed separately, with this scale of points, and sent directly to the fair managers in Ontario, so that they may have the option of using it if they choose, and handing it to those who are to be judges. I think it is going to be a great step in advance in the management of our fairs. I would move that the following gentlemen be a committee to strike a scale of points : the President and Mr. Thomas Beall.

Mr. DEMPSEY seconded the motion.

Mr. PETTIT suggested one committee on apples and another on pears, plums, peaches and grapes.

The SECRETARY.—Let the committee be a committee on apples and pears.

The PRESIDENT.—It is just as easy for the one committee to go over all the work, if those fruit lists that are now out were in and compiled, because we could tell pretty largely the fruits that are grown in the different districts. It is necessary to award points to the fruits grown in the different districts, and give them their general value in proportion to the district. Parties that are going to judge are going to judge according to the district they are going to plant in, and, of course, they are going to plant the varieties that have a large number of points. If we want to discredit a variety we give that variety a low standing, and the public are going to avoid that variety. I do not think the work of this committee can be done properly without the return of those statistics.

Mr. BEALL suggested that the committee have power to add to their number.

The SECRETARY.—I think we make a mistake if we make a large committee. If the scale of points is submitted to the Association for discussion before adoption, we will have an opportunity of modifying it as we choose.

The motion was then put and carried, constituting the President and Mr. Beall the committee.

CULTIVATION OF THE CURRANT FOR HOME USE AND FOR MARKET.

Mr. T. H. RACE.—I have given attention to the cultivation of currants for the last five or six years, and am persuaded the value of the currant for home purposes is not fully appreciated, in this section at all events. Three years ago one of our fruit men brought into town six baskets of currants, and had them standing at his door for several days unable to sell them, and I think he had to give some of them away. For the past two years I have had people coming from all parts of the county to see my currants. They talked so much about them that it created quite an interest in that section in connection with the currant, as soon as it became known that we had them for sale. I have about a hundred bushes, and they averaged about five quarts to the bush. My children sold them for ten cents a quart, and were not able to supply one-half of the local demand. Now I am satisfied I could sell any quantity, far more than I could raise in my garden. My method has been to plant the bushes about five feet apart in a row. I find they do better where they have plenty of room and air and sunlight. Plant them far enough apart so that you can get in among them to keep the ground clean. I have trimmed them out every fall, cutting out the older wood; and every second year I have placed beneath them a very heavy coat of hardwood ashes unleached. I place great value on ashes as a fertilizer for all kinds of small fruits. The White Grape and the Cherry are the two standard varieties of currants. I have gone considerably into the culture of Fay's Prolific. There is no currant I have met with yet that will compare with it for the first and second years of bearing; but if you allow the wood to become older than the third year, I think you will find your currant very much decreased in size; but if you keep the Fay's on two years wood I don't know that any currant will give you much more satisfaction. It is a currant that is very much admired, and it is from the production and the growth of that currant that I created such an interest in my section of the country. The first samples I had in my hand and showed them on the street, it was very hard to persuade the people that they were not some kind of grape, and many people refused to believe they were currants, because they had such a length of bunch and such a size of berry. However, on the whole, I could not say that the Fay's Prolific is on the whole a more profitable berry than the Cherry, nor is it as profitable a berry for home purposes as the White Grape, however, I do not think any collection would be complete without it. Another currant that I have cultivated during the past five years is Moore's Ruby. It is one that Stone & Wellington made a run on for some years. Its special value is its sweetness. I don't know that it is quite as heavy a bearer as the Cherry or the Fay's Prolific, but it is much more pleasant to eat off the bush. I have also grown the old Dutch Red; that is a very good currant, and the Marseilles. But I confine myself now to the White Grape, the Fay's Prolific, the Moore's Ruby and the Cherry; and for home purposes I don't know any person who would require a better assortment; and these properly

cultivated and kept in good shape, without allowing them to grow too much to wood, any ordinary size bush will produce from four to five quarts every year; they have done so with me. I am satisfied that the currant is of very much more value as a home fruit than has ever been supposed by the general public; and I am satisfied also that if a little more interest is given to it by members of this Association and recommended more to the public generally than they have done heretofore, that the currant is a fruit that will come into very general favor and very general use.

Mr. MORTON.—Does the Cherry currant bear well?

Mr. RACE.—It is a very good bearer. My soil is a clay loam.

The SECRETARY.—On a clay loam it will bear well; on a light sand it will not.

Mr. BUCKE.—Mr. Race has said nothing about the black currants.

Mr. RACE.—I have just ten bushes of the black currants, Lee's Prolific and the Champion. I have not found that the black currant is profitable to cultivate for sale, and all that I could recommend would be for any household just to have enough bushes to supply their needs. The black currant is a very valuable fruit for family purposes, and I just grow enough for my own use.

Mr. LITTLE.—In St. Mary's they are selling them by the bushel; they are much thought of and sought after.

The PRESIDENT.—The general report of the market is that the market is fully stocked with the black currant.

The SECRETARY.—They are a great deal of trouble to pick, and you do not get a very heavy crop; but I have been growing quite a large quantity of Black Naples, and I think at the price they bring they pay. You can get $12\frac{1}{2}$ cents and more per quart, or \$1.50 for a twelve quart basketful, and at that price, on rather a stiff soil, where they produce well, I think they pay a good profit. The heavy fruiting of my Cherry currants I attribute to the fact that I have been applying yearly wood ashes to the rows very freely. For home use I think Mr. Race is quite right in speaking highly of the White Grape. Of course if it were for market we would speak differently. He speaks of Fay's Prolific being a good bearer when it is kept back, so that there is young wood always formed. There is a very great advantage in keeping the currant wood heavily cut back. I cut back very heavily. I try to keep the old wood down and keep young wood springing up continually.

Mr. MORTON.—What we call suckers, that grow up, will they bear the next year?

The SECRETARY.—Yes.

Mr. BUCKE.—The red currant bears on two year old wood, the black currant on one year old wood.

Mr. MORTON.—I have found that the borer is worse in the Fay than any other currant.

The SECRETARY.—Keep the bushes well cut back and the borer would have no chance.

Mr. A. H. PETTIT.—You speak of the White Grape for home use only. Why?

The SECRETARY.—Because you cannot get any market for it. I cannot.

Mr. COLLINS.—I have had the Fay's for four years, and have not been able to gather any crop from it. I have been able to gather from the Cherry currant. The soil is heavy clay.

Mr. BUCKE.—I don't think anything can be too highly said of the currant. You can grow it in any section of Ontario, even at James's Bay. When I go past a farmer's place and don't see currants, I don't think there is much soul about that man. Anybody can grow it. Keep it well cultivated, let no grass grow amongst it, and in two years you will have a good crop. It grows quickly. The hardiness of the currant, and the magnificent crop it gives under good cultivation, place it in the front rank of anything we have in the garden.

Mr. LITTLE.—Except the strawberry.

Mr. BUCKE.—I think the white currant with milk and sugar is as good a dish as any one can raise. There is no "off" year with the currant. Last year we lost all our strawberries in Ottawa because of there being no snow.

Mr. RACE.—I got my first Fay's Prolific some six years ago from the late E. P. Roe, and the second year every limb was bearing heavily. You will find some of Fay's Prolific that are weaker in the wood than some other currants, and I found even a difference in the Fay's itself.

THE CurrANT FOR MARKET.

Mr. P. C. DEMPSEY.—We should understand what we want to grow it for before we select the location. If we want to produce a very early variety I prefer loamy land, warm land, sloping to the south, and we will have our currants ripen early, and the result is we have the first market. But for a late variety or producing our currants late, or enabling us to keep them late, we prefer a northern exposure and a nice clay loam if possible, a soil that requires under-draining. If we can preserve moisture four feet below the surface those currants will flourish, they will maintain their foliage till very late in the season, the result is we have our currants in the market after the market has been once supplied and the supplies have become exhausted, the result is about double what the early currants have brought. In point of culture I would endorse what has been said. Plant six feet one way by four the other. Give us plenty of room to cultivate in between them. I prefer the rows farther apart than five feet, and have them in a row. I prefer not too close pruning. We shorten them back and thin them out, but not as much as we did formerly. I found shortening them back had the effect of producing weakness in the crotch, even of Cherry currants. I grow for market almost exclusively, though we have other varieties, the Cherry currant and Versailles. I am unable yet to decide which I would have of the two; but we get more currants from the Versailles than we do from the Cherry, and the only difference I see is the Versailles is a longer bunch, and the berries on the extreme end of the bunch are smaller than those at the base of the bunch, that is about the only difference; but we find that when they are thoroughly ripened people buy them for manufacture into jelly, and we sell three or four times as many currants by letting them thoroughly mature. We manage to maintain the foliage and keep our currants until they get perfectly ripe, dead ripe, on the bushes. The result is purchasers have more jelly, they have better flavored jelly, than they would to have them when they are only about half or two-thirds ripe.

Mr. McMICHAEL.—We are growing currants upon a gravel ridge upon a southern slope. By putting on pretty heavily of ashes we have been successful with red currants. The black we were trying first upon very rich land, and we only succeeded in getting wood, but by growing on this land we are successful with black currants also.

The SECRETARY.—I think it is a great mistake to grow the currant in the form that used to be recommended, the tree form, with only one main trunk, principally because of the currant borer. If one stem is affected by the borer, your whole bush is gone, or if your bush is broken down in that way it is permanently injured. I think the far better way is to grow it in bush form and to allow quite a number of shoots, as many as you think it should carry, to spring from the ground; but thin these out by cutting out the older ones, those that are perhaps three or four years of age. Cut these out completely, and the young, vigorous shoots every spring cut back at least one-third, sometimes half, in order to encourage a constant growth of new wood. In this way I am sure I can get far more fruit than I used to under the old, more careless way of trying to keep the stems a greater length of time.

Mr. BUCKE.—When you talk about cutting the bush back, you don't mean that you cut the branch out at the root?

The SECRETARY.—I do both. I thin out the stems and I cut back the new growth fully one-third early in the spring, or else in the fall. That tends to form a large number of new shoots which give bearing wood the following year.

Mr. DEMPSEY---The saw fly is very easily managed if we take it in time, but it is surprising if we neglect it a few days how quick they will take the foliage off the currants. When the currant begins to come in blossom---before it is really in blossom---give the bushes a little shower of Paris green diluted. We can use it very weak. It takes very little to destroy those worms when they are first hatched. After a while now and then a leaf will appear perforated, and by repeating the same process we can destroy them with Paris green while the currants are not on the bushes. We want to maintain the foliage in the fall in order that the fruit buds mature properly for the crop of next year. That is one great reason why people do not have a crop the next year. When there is no foliage the currants are poor and lack juice, while the failure next year is certain.

Mr. GOUINLOCK---All that Mr. Dempsey has said refers to the raspberry bushes too. If you allow the worm to strip off the leaves you won't have any crop next year. Last year I used Paris green and this year I see nothing of the worm.

The SECRETARY---I do not like using Paris green on currants, but I always use the hellebore, applying it in the powder form. It is much less trouble than to mix it with water to carry about, and if the bush is treated in time it is a very simple thing to check the worm. You will notice that the worm begins its operations very low down, about the base of the bush, and if you are a little watchful you will observe a few leaves eaten down near the base of your bushes, and by a little examination you will see that the worms are beginning to work. I have a little sifter that has a handle and carries just what is convenient to carry in one hand, and the sieve is fine in it, and by just opening the bush a little when damp, either after rain or after the dew has been heavy, then a little shake will distribute enough powder to poison the leaves sufficiently to thoroughly destroy those worms at the very beginning; and if you do that your bush is saved, and it is very little trouble indeed. You can easily pass along from one bush to the other and sift enough along the lower part of the bush to prevent the worm from making any headway at all. If you let the worms get scattered over the branches it is a much more difficult task, and I suppose in a large plantation the best possible thing to use would be a spraying pump.

Mr. RACE—I have never yet seen a less expensive or more convenient method of sprinkling bushes than the one I use. I just take a common glass tumbler. If

the bottom is broken off so much the better. Fill that full of hellebore, draw a piece of book-muslin over it, take it by the bottom and go along, and you can sprinkle a hundred bushes with a very small quantity of hellebore in a very short time. I want to ask whether, if I moved the bushes in September after all the currants had been taken off, they would take hold and bear next year?

Mr. DEMPSEY---September is the best month for striking cuttings, and if for striking cuttings why not for moving the whole bush? I cannot see any advantage in applying the hellebore while the bushes are damp or applying it through a syringe. As I understand the way it acts upon the currant worm, they breathe through pores at their sides, and when the hellebore comes in contact with them they fall to the ground and they continue to grow less until they are fully exhausted in size or die that day. I have taken them when they had lost fully half their size from the effects of the hellebore and washed them a little in water and thrown them down, and they come to life and are just as lively as they ever were, and they will go back on the bush and eat the leaves again.

The SECRETARY---But if the leaves are poisoned when they come to eat them that will be a surer remedy.

Mr. DEMPSEY---But it does not take half as much. We mix the ordinary white hellebore with about five times its quantity of flour and we put on very little, and we treat them when the bushes are dry, and it is nicer to handle.

Mr. BUCKE---Very often the currant bush will ripen before the end of the season---that is to say before the frost comes, and the leaf will begin to turn a little yellow. Sometimes when the season is moist and cold that does not take place until after frost, but in a warm season often the currant bush gets ripe and the leaves begin to fall before the frost comes. As soon as you begin to see any leaves on the bush beginning to get yellow you can move your currant bushes, and the sooner you do it then the better, and you will have a good crop the next spring.

Adjourned at five o'clock p.m. till eight o'clock.

EVENING SESSION.

The PRESIDENT introduced Mr. D. D. Wilson, the "Egg King of Canada," who gave an address of welcome.

Mr. WILSON said he had been asked by His Worship the Mayor to welcome the delegates. He regretted that the storm had prevented many of the townspeople from attending. He touched on the various points of importance to fruit-growers---the production of first-class fruit, the selection of fruit for different localities, getting it marketed in good condition, the best mode of keeping it in a perfect state for the greatest length of time, and the securing of the highest price. Every fruit grower who would be successful must read, must think, must reason out for himself. It has been said that the man who makes two blades of grass grow where only one grew before is a public benefactor. Now, if this Association can educate only one man to grow twice the amount of fruit and of twice as good a quality as he has been producing in the past it might be said to be a public benefactor. We can all live and learn. Fruit culture has not reached perfection yet. The good book says: "As iron sharpeneth iron, so does the face of a man that of his friend;" and in this way we can sharpen one another by having discussions on certain topics where one man has given a great amount of thought to one line. Those who had come from a distance would come to the conclusion

from what they had witnessed in the past few days and during to-day that if this locality could not produce anything else it could boast of a superabundance of rain. (Laughter).

The PRESIDENT replied : We are always pleased to visit the various sections of this Province in the interests of fruits and fruit culture, flowers and forestry. We all share with yourselves of the town the disappointment on account of the weather in having a small audience. Had matters been different in that respect we would have had a fine gathering. Being a resident of the county of Huron I feel personally as the residents of the town feel. In the matter of fruit culture our county stands well to the front, especially in apple culture. The statistics show that very clearly. Our Association has various objects in view in travelling over this Province. In holding meetings in various sections of the Province, wherever we are invited for the purpose of special discussion we like to confine those discussions to matters of special interest to those localities. We are coming to that age in this Province when we must study specialties. We cannot expect in every section of the Province to grow all the fruits and make a success as far as the market value is concerned. Many of those fruits we can grow as a specialty for family use, whereas we cannot produce them for market value. We have come to the point now where we must make a more perfect study and dwell more upon specialties. We find those who make most money in fruit culture are those who devote their time to something special in the culture and something that their particular climate and locality are adapted for. We do not claim that we have arrived at the stage of perfection. We try to reap what information we can in the various sections. We are always willing to give out what we have had of experience in our own sections, but at the same time we ask those living in the sections where we meet and in the various lines of culture to speak at the meetings, because this is the way we gain solid information. There is many a man that comes to our meetings, here as well as elsewhere, who thinks he knows nothing special that will be of general interest or of any use. That is a very great mistake. Sometimes the simplest remark dropped from the youngest amateur we may have in any one line of culture may redound to the very large benefit of us all. Our meetings are open to all, and we feel that the time has come when the ladies ought to take a deeper interest in the matter of fruit and fruit culture and especially in floriculture than they have in the past. For instance, at Farmers' Institutes I have made a special point of introducing the matter of ornamental gardening on a small scale, asking farmers to indulge more in that class of work than they have in the past. We believe the ladies on the farms---our farmers' wives---are hard worked ; they work harder than the farmers themselves now-a-days. The farmers have implements to save labor, whereas in the household there is not that advancement that there has been on the farm. The work is a repetition, morning, noon and night. It is monotonous. We ask our farmers to indulge more in ornamental planting---to plant, for instance, ornamental trees, flower beds and everything of that sort ; and I believe that the cry that we hear over this Province from end to end---the question asked so often, " Why do young men leave the farm ?" --- would not be asked if matters of this sort were indulged in more generally, if home were made more pleasant and literature provided for young men and young women on the farm. I assure you that our Association, notwithstanding the inclement weather, feel satisfied because we find, as we always did, that we had good men with us, and as long as we know that the people themselves are satisfied, and feel that they are deriving some benefit, we are satisfied with our Association. (Applause).

QUESTION DRAWER.

Q.—Is it advisable to use tanbark between the rows of strawberries to keep the weeds down, and also to keep the berries clean? Is tanbark any good as a fertiliser?

Mr. LITTLE (Granton)—I have never used tanbark, but I have used well-rotted hardwood sawdust, and I have found that by putting enough on it will keep down the weeds; and another year I have used coal ashes, and that is just about one of the finest mulches that I can find for the strawberries. No weeds grow where they are, and in the spring when they get a good dressing of wood ashes they are there for two or three years, just with pulling a weed here and there.

The PRESIDENT—I am afraid tanbark would have the same effect as fresh sawdust would of souring the soil, and as a fertiliser I am not aware that it has any particular properties that would make it serviceable.

Mr. LITTLE---I think it would sour the land and destroy the vitality of the roots of the strawberry.

APPLES FOR THE MARKET.

The PRESIDENT.—It seems to me more natural, looking at the apple culture for the past few years, to go a little back of the subject before touching on the subject itself. We continually hear the question asked in every part of the province now-a-days, "Why is it that we have so much inferior fruit in our orchards?" And it is a fact. I believe that our fruit is not what it was some years ago; and the question arises, What is the cause of this? That might be proved in a good many different ways. There may be a good many causes that I do not think of at present; but, generally speaking, I believe that a great many of the first principles of planting an orchard, and selecting, have not been adhered to. Under-drainage, for instance, is a very particular point that should always be attended to before planting an orchard. Then, in many of our old orchards we find the trees planted too close together. It is absolutely necessary that an abundance both of sunlight and air should penetrate every orchard; and the trees should be planted with regard to varieties, because they vary so much—some varieties being spreading varieties, such as the Rhode Island Greening and the King of Tompkins County, which spread tremendously, whereas other varieties might be planted somewhat closer than are more upright in their growth. I have laid it down as a principle to plant them even forty feet apart every way. It seems a long distance to begin with, but when you get an orchard in full bearing that is the time to find the advantage. I really don't think, upon the whole, that forty feet would be too far for general orchards of mixed varieties, as we generally plant them. Of course if we were planting an orchard of upright growers it would be too far. Again, our orchards are neglected as far as cultivation and manure are concerned. Many orchards are not touched for years in the way of cultivation; and as far as manure is concerned they are seldom visited with a load. Then the trees are not trimmed or kept clean. It is a common thing to go into our old orchards and find the trees covered with the oyster-shell bark louse, for instance, which is very destructive. No tree can produce healthy fruit where these points are not attended to. It is as necessary to feed a bearing orchard with proper nourishment as it is to feed the soil where you are growing annual crops of any other

description. It is too often that we find in bearing orchards, where they are cultivated, you find a crop of some other description planted there. That is trying to drag from that soil two crops at one time. It is not fair play with the trees at all. I think the time has come where it is actually becoming a serious matter that these points are not attended to. I am afraid the time is not far distant—for this country is getting pretty well aged all through so far as orchards are concerned—when we will be on the same road as they are in Britain—we will be complaining that we cannot grow apples, that the orchards are running out. It is simply our own fault, because we are not keeping up the fertility of the soil and attending to those rules that we do attend to in the culture of any other crop on the farm. I believe, if these points are attended to, there is no spot on the farm that will pay better than the orchard.

As regards the methods of culling, packing and grading apples for market, I believe, and I know I have a good deal of opposition in what I contend, that the whole system of buying fruit, for instance, is wrong. It is a system by which we fail to induce the grower to grow those varieties that are really wanted in our best markets. I believe that in buying fruit we should buy as we sell. We buy our fruit at present in almost all sections of this province at so much per barrel for fall apples, and without regard to kind or quality, and so much per barrel for winter apples. Now that system, according to my estimation, is wrong. We should buy according to kind, according to the absolute market value of each variety. We find, when we come to sell our consignments in Britain and other markets, that we must sell, as a rule, according to quality and according to variety. I have been thinking the matter over so far as the scale is concerned. Well, it would be a difficult thing for me to go at once and place a scale; but to give you an idea, I would place it something like this, I am speaking now only of thoroughly well-grown fruit, perfect fruit of its kind; I would take a scale something like this: for instance, take Ribston Pippin and Blenheim Pippin, those are two varieties of course you cannot grow in all sections, and they are not varieties that are valuable, that pay the producer, in many sections; still where they do grow to perfection you will find that they are excellent and profitable varieties to grow, and those are varieties that are highly esteemed in the British markets. Take these at an average of \$1.50 a barrel; if you are paying \$1 for Baldwins they will stand in about that average. King of Tompkins County would stand very much the same, perhaps five cents a barrel less than Ribston and Blenheim. Then the Northern Spy—taking that perfect, which the last few years seems to have been hard to find, owing to the fungus spot in the apple—but that, looking at the market in Britain, would be worth about \$1.30 in the orchard. If we bought the American Golden Russet at the proper season for selling it, it would be worth the same; but unfortunately, when we buy that, we buy it at a season when we cannot get the proper price for it in the markets where they use it. They do not use that apple in the British markets till after the first of January. Of course they buy it when consignments are shipped there, but they usually store it till after the first of January. Therefore we have two apples that sell also from \$1.20 to \$1.25. Rhode Island Greening I would like to place a little higher than the Baldwin, because it is a better all-round apple, both for eating and cooking, than the Baldwin; but unfortunately in the British market they have not come to that state of perfection in the taste for our fruits that they look sufficiently well to quality, to intrinsic value; they look too much to color; hence they are not willing to pay as much for the Greening apple as they are for a highly colored apple; therefore Baldwin brings a higher price in the British market than Greening; but I believe the time is coming, and probably not far distant, when the Greening will bring a higher price in the market than

the Baldwin does. So that in placing a scale of points it would require a good deal of consideration. The scale would have to vary according to the season and according to the demand, but I would place it something in that way. It has got to be agitated, of course at the markets where we sell. I believe that is the proper way to buy, because then we are acting fairly and squarely with the producer, because we buy just in the proportion that we sell, and we are inducing that grower to grow those varieties that we actually want for the particular market that we are dealing with, and that is what we want to bring our growers to. Now we are not encouraging our growers to do that way ; we are paying the same price all around for everything that is winter. Under the present system that grower is going to grow everything that is hard, for winter apples, because he is getting the same price all around, and the variety that will grow the most fruit is the variety that is most valuable to the grower ; and it may be a variety that is practically worthless as far as intrinsic value is concerned.

The SECRETARY.—You did not refer to the Gravenstein.

The PRESIDENT.—I just referred to the winter apples especially. The Gravenstein in its season I place as the best early fall apple. Of course they they vary ; you will find it early in some sections, and somewhat medium to late in other sections. The Gravenstein I consider the finest apple we have. The Duchess of Oldenburg I always place for an early fall apple ; although in some places I would place it as a summer apple. You will find it in some catalogues placed as a summer apple, and in some other as a fall apple. The Duchess is an early bearer, and a heavy bearer, and it is always an advantage to thin that out early, and you can do that with advantage, because you can begin to use it for stewing when it is about half green. It comes at a time of the year when we feel that we want something in the apple line, and it is very palatable. I consider it the finest general early apple that we have, and an apple that I am confident, if we had proper facilities for shipping to foreign markets, would bring a large amount of money. It is an apple that growers, who make a specialty of growing an early apple for home markets, make the most of. For an all-round general apple I would recommend the Duchess of Oldenburg over anything that I know of.

The SECRETARY.—You did not mention the Roxbury Russet.

The PRESIDENT.—So far as we have gone, they place the Russets all on an even grade. Of course for long keeping generally you will get the Roxbury larger than you will the American Golden ; and for late shipping the Roxbury will no doubt make more money ; but as a rule, the way we ship, and the particular season we do ship and sell, we make no more money out of the Roxbury than we do out of the American Golden.

A DELEGATE.—Is the Duchess a good shipping apple ?

The PRESIDENT.—It is not to ship a long distance. We would require a cold place to ship to the old country. I have shipped it and have succeeded in landing it in Liverpool in very fair order, and received a very fine price for it. It was in a season when fruit was rather scarce any way ; but it is an apple that would "take" in any of their markets there, on account of its beauty if nothing else, because they have a great eye for beauty over there. Put anything up in a fine package and show it to them in good condition and fine looking and they do not seem to grudge the price at all ; but anything inferior in appearance they don't want it at all. The British market is the worst market I know of for a poor article in fruit, but the best for a first-class article.

RODERICK GRAY.—I could grow Duchess two to one. They are a fine apple, nice to cook and nice to look at, and you can commence using them early, and what remains on the tree grow larger for standing.

D. D. WILSON.—The present system of buying is a very bad one. It gives no encouragement to the grower of fruit to produce a good article. In this neighborhood, generally, the buyer must have made up his mind he was going to make his profit out of the good fruit, for he could not make it out of the medium fruits. I think that by a proper selection, and by giving encouragement to producers to produce the most saleable apple; good color and good quality and good size; I think better prices could be paid than have been paid for that class of fruit, while not as high prices would be paid for a poorer class of fruit. The question is, How are you going to adopt any other mode? A man comes to the grower and says, I will give you a dollar a barrel, all round, for all your winter apples; and another buyer says, I will give you \$1.50 for all these apples, and \$1.35 for these, and \$1 for these, and 80 cents for something else; the man that says he will give the dollar all round will get the apples, the probabilities are, and so the mode that is in vogue at present will be perpetuated. How are you going to correct it?

The PRESIDENT.—I can think of no way to remedy it except to wait till we ruin all those men who pay a dollar a barrel.

Mr. WILSON.—I have been in the habit of shipping apples till the last two years; and I got so disgusted with the mode of paying perhaps a dollar all round, that I gave it up. If the information of the president has given was spread around the country, would it not open the eyes of the community to the planting of trees that would give them the best results? Usually the poorer qualities of fruit produce more abundantly, and consequently a man that gets a dollar all round, makes more out of his poor fruit than he does for his better qualities. We will have to give more attention to the mode of packing and transportation. It is of the utmost importance that the goods you ship should arrive at its destination in the best condition possible. We have cold storage and refrigerator cars, and cold chamber in the steamer. There is another thing wanted; you want a cold chamber or cold storage when it lands; because fruit is like anything else, it wants to be kept at an even temperature or it deteriorates very quickly. The kind of fruit, the quality, the selections that are made before shipment, and everything of that nature must tend greatly to increase the profits to the producer. I believe our orchards are deteriorating very rapidly, and if more care and nourishment are not given to the soil than has been given, the orchards in this and other localities will be non-productive in a very few years. I do not know of anything that is produced on the farm that will pay better for care and culture and manure than the orchard. It will not produce if left to itself any more than a field of wheat will if left to its natural condition and the wheat sown over it. It must be prepared, cultivated, manured, underdrained; it must be put in good "tilth," and if that is done with an orchard you will get good results. I will give you my experience with an old orchard in this town. It was non-productive. Everything was very small; the trees were planted thickly. It would have paid me if I had cut half of them down. I pruned the trees. During the winter I manured it, and I kept manuring it each winter for a number of years. The third season I had an abundant crop; not only that, but apples about as large as you usually find on a young orchard; showing that all that that orchard wanted was plenty of nourishment at the root; it had the air and everything around it that was necessary, only it wanted something to give strength to make it fruitful, and that was the result. Out of that old orchard I have taken apples that when shown at the fair here have taken the prize. The orchard is too thick by one half now,

and the apples are not as good color as they would be if we had more space ; but we can get the size and an approximation to the quality, only you want more air to give them better quality. I did not cultivate it ; it was in grass and has remained so.

Mr. McMICHAEL.—I like the system of sowing in clover and then plowing under ; the clover that is plowed under manures the land very nicely. It is in every way clean. For the larvæ of the codling moth I use bandages on the trees, scraping the bark off, and also use Paris green and keep them very much in check. For bandages I use old carpet about four inches wide : tack one end and wind the other around and nail it ; and every couple of weeks go around and destroy the larvæ ; get sometimes from 60 or 70 of the larvæ in twelve days with those bandages ; about this time of the year till the first brood are gone, then leave them till the apples are ready ; then destroy the next brood in the fall and put the bandages away until the next spring.

The PRESIDENT.—The point Mr. Wilson made regarding shipping is very important. Those are matters we are continually pressing on the railway and steamship campanies ; and it is the intention to hold a large convention either in Ottawa or Montreal—we hope in Montreal—next winter for one week. The convention is going to be held and we are using our influence to have it held in Montreal, for the reason that Montreal is the head centre of foreign shipping for Canada, and the headquarters of our large railway lines ; and we want to get at them ; we want to speak to them ; we want to consult them on matters of this sort ; we want to have a higher state of perfection in handling and shipping our goods, and we want a different accommodation entirely in the steamship lines from what we have had in order to land our goods in perfect order in the British and other foreign markets. Another important point that we have discussed often, and looked into, is the matter of handling fruits in the British markets ; and that point impressed itself upon me very particularly when, about two months ago, there was an attempt to form a company in the city of Toronto, for the purpose of handling all lines of Canadian produce in the British markets ; and I was astonished at first, but upon consideration I did not wonder at the opposition that was showered down upon us by the brokers in the different lines, the cheese brokers especially, and the fruit brokers of Britain. They used every influence that seemed within their power to kill the company. They did not want the business taken out of their hands for some reason or other, and we can easily guess at those reasons. They say that the formation of such a company was going to hurt their business, because the line upon which the company was going to handle the goods was different from the method adopted by the commission brokers of Britain, quite different. In the first place the company would not be allowed by their charter to be speculators in any sense of the word. They could not purchase the goods they were handling for producers or others, because they would handle for producers or any one who would ship to them. Therefore the brokers seemed to unite for the purpose of killing the company, and so far as the present season is concerned I am afraid that they have succeeded, largely on account of a little weakness on the part of one man, especially, in the city of Toronto, and I was very sorry indeed to think that a man of such prominence would give way, and I am afraid he has given way to the influence of the brokers in that respect. However, I think there is a possibility of the company going ahead yet ; but it proved to me that there is a matter there that is well worthy of our consideration and the consideration of the producers of this country. The intention of the company was, in the handling of fruits, for instance, to deal almost entirely with the retail trade of Britain. Now, that is a point that hurts

the broker at once. He does not want us to do that. The broker wants to sell only to the wholesale trade, and the wholesale dealer has the control of the retail trade; the retailer then selling to the consumer. They used every sort of artifice for the purpose of delaying the operation of the company, in fact, killing the company outright; and I hope that either this company or some similar company working on the same basis, will yet come to the front for the purpose of handling the produce of this country. It is highly important that they should; and it is a matter that the producers of this country cannot afford to allow the broker of Britain to control any longer.

BEST THREE VARIETIES OF STRAWBERRIES FOR THE HOME AND MARKET GARDEN.

The PRESIDENT—Mr. Little is probably the highest authority we have in Canada on strawberries. He makes a specialty of testing every variety of strawberry he lays his hands on, and I think he succeeds admirably in laying his hands on everything in the strawberry line.

Mr. JOHN LITTLE (Granton)—There is not a variety of strawberry that has come before the public for the last fifteen years but what I have tested, and some of those were not worth the ground they were put on, and the money and the time we lost; nevertheless, I am still at it. They are sent to me from everywhere, I have had plants sent to me this year from ten states for testing, and if I was going to plant to-morrow I would not plant any old varieties. You will ask me why? because if you get a strawberry that will be three times as large as the Crescent, you would surely want to grow that in preference to the Crescent, no matter how valuable it might be otherwise. There is a new variety that has come out—the Haverland—that was a seedling of the Crescent, and it will come to pick just as early as the Crescent will, and it is nowhere to be compared with it, I have picked them on the 17th June, with all the first blossoms gone, and they were a wonder to all who saw them in St. Marys. I never have to go further than that, I sell everything I raise in the strawberry line in St. Marys, and I get an advance beyond those that ship here and yonder and everywhere. Then there is the Warfield—a very valuable berry, that will yield more, and larger, double what the Crescent would in its palmiest days. Then there is the Eureka. I had that from Birk County, Ohio, four years ago; and I had the privilege of letting it go to friend Woolverton and Mr. Lyons, and he wrote me last year having fruited it two years, that out of one hundred varieties he had nothing to compare with it except the Bubach, and that did not produce as much or as large. There is something singular in connection with the Eureka; I never, since I got them, mulched them, and any that have got them can testify to their root matter. No frost ever took them out of the ground yet, while others, that would probably have half a dozen roots, would be right on the top of the ground, and these have held there just as if anchored all through the summer and winter.

The PRESIDENT—Would you vary between the market and the home garden?

Mr. LITTLE—I would make no difference; for if a berry is valuable for one, it would be for the other. Most of them all, with care, will ship. For instance, the Wilson is not ripe when it is shipped, neither are some of the other ones that color early.

Mr. GOUINLOCK—What about the Jessie?

Mr. LITTLE—The Jessie is a favorite mostly everywhere it is planted. I went to Wisconsin two years ago just to see the Jessie growing, and I saw them lying there in piles, of a third picking, just as large as plums. But you will find men here and there that do not give them the attention that they ought to give; they will stick them into the ground, and if they do not grow it is the fault of the originator, and men are combined to palm things upon the community that are worthless; but I give you my word that I never saw in my life anything to exceed the Jessie for fruit—and I have seen many good things in the strawberry line—unless it would be the Eureka, and that is a wonder to every one that saw it.

The SECRETARY—You have a seedling yourself—the No. 10—that I got some fruit off this year, and it is a very fine berry—a large berry.

Mr. LITTLE—Yes, it is one of the good things too; but John Little doesn't say much about his own fruit. (Laughter.) Different soil and different treatment makes a difference in the fruit. The habit of the Haverland with me is to let its top down. The color of that will take a buyer's eye anywhere; it is a beautiful orange color, and a man or woman in going to buy a strawberry don't ask whether it is good or bad or indifferent, if it is large enough. You will find that, go where you will, about the strawberry; they will buy the fruit and eat it, and so will every child that sees it.

The SECRETARY—You think a good deal of Bubach's 5?

Mr. LITTLE—Yes, it is a good berry, but it won't ship; are a grand berry, and the foliage is just complete. The Manchester is a famous berry, but it will not fruit, and sometimes in fruiting time the foliage will rust, but it will come out in the spring as clear as a dollar.

The SECRETARY—What do you think now of the Itasca? It is not proving as good as it did.

Mr. LITTLE—No, but the Logan is; it is a good bearer, and a fine size. The Itasca is a failure so far as the fruit is concerned. The plant is a fine one.

The SECRETARY—We have better modes of planting strawberries than those mentioned in the paper. The easiest and quickest way I have found to plant a large number of strawberries, is for two persons to go on, one with a spade and the other with a basket of plants; and the one who has the spade simply puts it in the soil, runs the spade in a slanting direction, and raises the handle a little, just sufficient for the other to put the plant under the spade and spread out the roots there and hold them in the proper position while the other one withdraws the spade; the earth falls back at once on the roots of the plant, and he presses his foot upon it, and the thing is done. They can walk along that way very rapidly.

Mr. LITTLE—You will be told there are some varieties of strawberries that are imperfect, while other varieties are perfect. How are they fertilised? They will tell you that strawberries are fertilised by the bees. I believe that myself, but there was neither bees nor wind this year, but two days, to fertilise the strawberry, and there is the Crescent seedling—and it is just about one of the worst to give you a crop—a perfect fruit; and the Manchester is another; and there was but two days that the bees could work and carry the pollen from plant to plant. Now how will you account for that, and all these which you call pistilate varieties give perfect fruit this year? I maintain it is not all with the bees, that sometimes even when the bees are there they have not time to do their work properly; and yet this year there was neither bees nor sunshine when all the

flowers were gone, and yet I had just about as perfect a crop of fruit as ever I raised in my life—that is, what the frost left. Now, how do you scientific gentlemen account for that?

Mr. MORTON.—You must recollect that bees are not the only insect nature has prepared for the cross fertilisation of flowers.

Mr. LITTLE.—They are the only ones that are said to fertilise the strawberry.

Mr. MORTON (of Wingham)—I am perfectly satisfied of this, that any insect that is found in the locality of a flower that bears pollen, that insect must carry away a certain amount of pollen, because the insect was built that way for that specific purpose. I am of opinion that the bee plays a less important part in the fertilisation of the strawberry plant, than does a small little beetle. I have found as many as half a dozen upon one flower. Now, my bees do not operate on the strawberries to any great extent. They will go there, but they don't linger very long ; they busy themselves with other flowers, they would rather go elsewhere ; but those small beetles are there, and I have no doubt there are other insects that visit those flowers. It does not make any difference whether it is the bee or any other insect—if it comes near a flower that is provided with pollen, it will transmit it to other flowers. There are insects that will work upon pollen when the weather is so bad that the bee will not work on it. You will find a number of blossoms of the Crescent's seedling that apparently bear what I would call pollen. You will find hermaphrodite flower on the Crescent seedling, but the stamens are less numerous than on what are known as perfectly flowered strawberry plants. The supposition is that the pollen-bearing stamens are not present in sufficient proportion to make the perfect fertilisation crop. I will tell you why I think that is correct. I have grown Crescent seedling under glass—taking plants that I knew were Crescent seedling—and have covered them over with glass so that no wind could get at them, and no insects—at least I thought there were no insects. Well, the crop was certainly imperfect, and I found that a great many of the berries were defective, in consequence of the seeds on one side dropping, and the receptacle of the berry was imperfect, therefore I found there was not sufficient fertilisation.

Mr. LITTLE—I never saw anything or any insect to visit the strawberry bed except the bee. I never saw an insect except it would be the crown borer, bother the strawberry.

Mr. MORTON.—Those berries that you mentioned, how are they classed ?

Mr. LITTLE.—They are all classed pistillate ; and on the Haverland I had not an imperfect berry.

Adjourned at 10 p.m., till 10 a.m. to-morrow.

The President took the chair at 10.30 a.m. on Thursday, July 4.

QUESTION DRAWER.

Q.—How can large plants or small fruit trees be kept growing when too large to move into bigger pots or boxes—that is, when you cannot get a pot large enough to hold them ?

Mr. STEWART.—When plants get root-bound, or the soil gets all filled so that they cannot have much growth, I wash the soil away from the roots and re-pot them with fresh soil. You can sometimes use liquid manure. Once or

twice a week that would help them considerably. The best way is to wash the soil clean from the roots and put them into fresh soil. If you are going to put them into a larger pot I would leave the soil on the roots.

Q.—Should raspberries be manured with stable manure every year, or would not bones be better, alternating years?

Mr. BUCKE (of Ottawa).—Raspberries require a great deal of manure, and I find it better to mulch them heavily with stable manure in the spring, and after the crop is done to dig it in. I have never tried bone manure, although I fancy the mulching is what they require as much as the manure. I would repeat the stable manure every spring and fall.

Mr. DEMPSEY.—That is what we have done, and we find the most satisfaction. We have tested bone manure too, but mulching helps considerably.

DELEGATE.—I thought the stable manure would make them grow too thrifitly.

Mr. BUCKE.—In Ottawa we do not pinch the canes the same as they do here. We prune them back in the spring. We let them grow as high as they like ; they sometimes grow eight or nine feet.

The SECRETARY.—You lay them down in the winter ?

Mr. BUCKE.—Sometimes we do, and sometimes not. We grow them tall so as to lay them down. They grow thinner.

Q.—Would not half inch bones be more profitable than bone dust, on account of adulteration ?

Mr. DEMPSEY.—There is another question involved in that ; is it really bone dust after it is adulterated ? I have bought for bone dust a great deal of plaster in my time ; but the finer the bones are ground the better. I have seen the result of fine ground bones—not half inch bones—for five years after applying to garden crops. Apply first half a ton to an acre. You can start off that year and produce a good garden crop, and all you have to do for five years is to fight insects ; and I believe it is the cheapest fertilizer to-day in the market. Buy the bones, and buy a bone mill, and grind them yourself.

Mr. MORTON.—For appreciable result I don't think half inch bones would be of much utility in the garden. I would not use them. In buying bone dust you should buy from a respectable firm. If you buy because it is cheap, you are apt to get it nasty. If you put bones into the ground they will remain a long time before they will decay. I have bones I pick up every year, that have been in the ground for ten years. The way I do, I buy the bones and ship them to the market and have them ground for me, and I believe they send me back the produce of what I send down. I use bone dust in preference to stable manure for my raspberries.

Mr. DEMPSEY.—Where can you get bones ground ?

Mr. MORTON.—In London or Toronto. You can get it done at Lamb's blacking factory in Toronto.

Mr. BUCKE.—If you can get your bones reduced by steam it is a great deal better than getting them ground. In Ottawa we have a pork manufactory, and after they have taken out all the bones they put them under a high pressure of steam and reduce them so that the largest of them you can crumble between your finger and thumb. You apply that on the soil, and you have the genuine article ; but you must be careful how you put it on, because it is pretty strong.

Q.—What is the best remedy for cabbage worm ?

The SECRETARY.—Pyrethrum powder, I think, either applied as a powder, or diluted in water. Apply it with a puff.

Mr. MORTON.—I think the best is Paris green. I am not afraid, because the amount we use is not large. I don't see any danger from the use of Paris green, because the injury done by the cabbage worm is done while the cabbage is small, and all those leaves drop off and are cut off, anyway. They are no part of the heart. Before the cabbage is headed out you mark a leaf, and you won't find that in the head at all. I don't think there is any danger from absorption of poison. But I have found very good results from ordinary road dust thrown upon them pretty plentifully. The trouble with pyrethrum is that you cannot always get it pure and fresh, and you have rather variable results from its use.

Mr. LUCKE.—There is no danger from Paris green if it is done with the hand of a man that understands what he is about; but if you recommend Paris green to the general public you are going to get into trouble, because they will apply it too heavily.

The SECRETARY.—And what they will use for cabbage they will use for cauliflower.

Mr. RACE.—Mr. Mitchell's method is to use his finger and thumb. (Laughter). I adopted that means the last two years, and I have been successful in growing cauliflowers. I found I could get through the patch and pick off the worms in about as little time as by using any kind of powder.

Q. What is the best remedy for the striped bug of the cucumbers?

Mr. MORRIS.—I use for cabbage worm five pounds of sulphur to fifty pounds of land plaster and twenty pounds of wood ashes, screened all together. I go over three times in the season. For the squash and cucumber bugs I use the same material. You don't have to put it on the plant, but only on the ground, and I guarantee that every bug will skip that place. Sometimes I sprinkle it on the plant, but as soon as I put it on the ground I see every bug crawl away.

Mr. DEMPSEY.—For squash and cucumber bugs I use nothing but pure sulphur. We use sulphur for mildew on grapes under glass, but it is not the sulphur applied to the mildew direct; but when the rays of the sun strike the sulphur there is a certain amount of sulphuric acid rises, and this is evidently what destroys the bug. As soon as the sun shines the bugs will start very quickly—they can't seemingly endure it.

Q.—What is the best remedy for lice on rose trees?

The SECRETARY.—I should think the kerosene emulsion would be the best thing here.

Mr. BEALL.—What is meant by lice?

The SECRETARY.—The aphid.

Mr. BEALL.—I have never seen the aphid on the roses.

Mr. MORTON.—Strong tobacco water is the thing I have been most successful with, and I like to mix it with soapsuds, and boil together, make an infusion of tobacco sweepings which I get from the cigar factory, and make a good strong decoction, and syringe the plants with it. I have tried pyrethrum and do not like it so well. Whale oil soap I have tried, but it is an awfully stinking thing, and the odor remains on the buds long after. In the earlier part of the season I sometimes mix the whale oil soap with the decoction.

Mr. PETTIT.—Is there any danger of making the tobacco soap too strong?

Mr. MORTON.—I don't think so. What I gave last was actually black. I use about a quart of tobacco—pure leaf, no stems—to a pailful of water.

Mr. DEMPSEY.—I have used a pound of black tobacco to an old-fashioned pail of water.

Mr. RACE.—I use half a dozen cigars to a pail of water.

The SECRETARY.—I use half a pound of soap and a gallon of water to two gallons of coal oil, diluted with I think thirty parts of water. If you pour in the coal oil while the suds of the soap and water are in a boiling state, it will immediately mulsify. It is better to stir it while you are pouring the coal oil.

M. DEMPSEY.—A very cheap remedy, where people have only a few rose bushes, is to cover the bush with the old hoop skirt, put paper over it, and burn tobacco under the bush.

Mr. RACE.—I can give you a cheaper method than that. When I am asked to take a drink I say, "No, thank you, I will take a cigar." I take those cigars home, and by spring I have quite a lot of them. I take half a dozen cigars to a pail of water.

Mr. ELLIOTT.—How do you apply these solutions?—because I notice these insects are invariably on the under side of the leaf.

Mr. MORTON.—Not the green aphid. The thrip is under the leaf.

Mr. ELLIOTT.—A good many of these insects are on the under side of the leaf, where the vegetable matter is soft and juicy, and it is very difficult to get at them.

The SECRETARY.—The lice cluster on the upper side of the stem, but the rose hopper on the under side of the leaf. For the rose hopper the best thing is to puff the pyrethrum powder up from beneath on the under side of the bushes when the bushes are a little damp. I have found that to rid the bushes of the hoppers in a very little time.

Q.—Please state the preferable situation for the raspberry—whether in the shade or exposed to the sun. Which are the best varieties?

The SECRETARY.—I think decidedly have an open exposure for the raspberry; I have found the Schaffer, for instance, growing exceedingly well under the shade of peach trees; but I don't think that would be the rule. As for varieties, I think the Marlboro for early, and the Cuthbert for the main crop. I value the Turner very highly also. For black, perhaps the Souhegan and the Gregg.

Mr. BEALL.—Do you think the Marlboro is a fine-flavored raspberry?

The SECRETARY.—No, but it sells well, and it bears very well with me.

Mr. MORTON.—Shade is not preferable for the raspberry; I would want an open exposure. They sometimes do well on the north side of a fence, if the fence is not too high; but I would rather have open ground. For home consumption I would prefer Turner and Cuthbert; Marlboro I would not have for home consumption, although you can get a good big crop of them. Two reds are enough for any man; one is enough for home consumption, because they are dreadful things to run. Schaffer's Colossal is my favorite; I am rooting out all my reds and putting in Schaffers. I have about a hundred of them in my garden, but in blacks I recommend the Tyler rather than the Souhegan. Gregg for late; and the Ohio is a very good one if you want to try a few berries, because they hold out better than the others; I think those three, to come after the Schaffer, and I would advise you to plant at least one-half of the whole number Schaffer, and your choice out of those two reds would cover the ground. Golden Queen I think is going to be valuable. Caroline I would not have. I have no trouble with the Cuthbert through the winter. The Cuthbert does not bear so heavy a crop as the Turner, and it is not so nice for the table. The

Schaffer is the finest for canning; don't can with any sugar, and put the sugar in when you put them on the table, and you will have the flavor of the fruit. The same with strawberries. Brinkle's Orange is one of the finest berries that there is, but it is not handy enough with us. We would have to lay it up and cover it up.

Rev. Mr. MACAULEY.—I find the Golden Queens very strong growers. They bore some the same year they were put down, but they were a little later coming on than the Cuthbert, but I think they are quite as prolific as the Cuthbert. The Cuthbert is not anything like as strong a bush; and I am a little afraid that while the Cuthbert bore very well last year, though it was their first year down, they are not going to hold out this year with the Golden Queen.

The PRESIDENT.—What is your soil and exposure?

Mr. MACAULEY.—It is the shady side of the garden, and it is a kind of clay loam in which there have been a few loads of sand mixed in order to lighten the soil; richly manured with stable manure.

The SECRETARY.—I have one or two dozen Golden Queen that were bearing last year, and my opinion agrees with that of Mr. Macauley. It seemed to be even more thrifty than the Cuthbert. The Cuthbert berries have not been doing as well lately. I have two or three acres of them, and they have not the healthy look they should have the last year or two, and I am rather afraid they are going to fail to a certain extent; but I have not noticed that with the Golden Queen, so that I am inclined to think it is a thrifty bush.

Mr. DIXON.—I would like to get a few of the best varieties of grapes for home use—say three—for this locality.

Mr. PETTIT.—I would say Moore's Early, Worden, Lindley, Delaware, and Brighton. For a white grape I think Lady would answer better for home use than anything else.

Mr. RACE.—I have tried the Moore's Early, and I have thrown them all out. It is impossible to grow enough wood unless you get the ground very rich; and even after that it is not a good bearer in this section. The grape I have the most satisfaction with is the Worden, the Lindley No. 9, the Agawam No. 15. I never tried the Rogers 44, but it is growing in the town. So far as the growth is concerned I would prefer the Niagara to any other white grape.

Mr. PETTIT.—Do I understand the Agawam will ripen with you?

Mr. RACE.—Yes, it ripens every year with me. The Agawam ripened last year a little north of my place. I intend to confine myself to these three varieties—the Lindley, Worden and Niagara. I don't know a grape that will grow better here than the Champion, but it is no good after you grow it.

Mr. MORTON.—I would recommend the Wilder No. 4 instead of either the Niagara or the Agawam. I would say Worden, Lindley and Wilder.

Mr. RACE.—The Salem will do better in this section than the Wilder.

Mr. MORTON.—It mildews.

The PRESIDENT.—It is evidently pretty hard for a person to pick out the three best from the different speakers. If I were judging from my own experience, and what I know of this section, I would say for this section Worden, Lindley and Niagara.

Q. What is the best way to cultivate cedar hedge?

The SECRETARY.—They will grow without much cultivation after the first year, in my experience. A little work with the hoe and spade the first year.

The PRESIDENT.—The cedar hedge is one of the most satisfactory hedges you can plant, upon condition that you can get good small stocky plants when you put them down. The Norway Spruce is a very handsome and satisfactory hedge. I trim the cedar every second year, giving them freedom then to get a good growth. The cedar will bear trimming better than the Norway Spruce after the first year.

DELEGATE.—Will it require much water?

The PRESIDENT.—No; in my section I never water at all unless it is particularly dry season when you plant.

Mr. STEWART.—The cedar makes equally as good a hedge as the Norway Spruce. The Norway Spruce stands well for maybe ten years, but after a number of years I find it begins to decay a little; but you can prune the cedar for any length of time. I never saw a cedar hedge that was decayed. I don't think they require much cultivation.

The SECRETARY.—I think it would be a mistake to use the Norway Spruce around the door-yard for a hedge. It is too strong a grower. The cedar is a much slower grower, and therefore is much better adapted for a small hedge, and can be kept pruned into better shape; but if it is for a hedge that you can allow to grow up large, as a screen, certainly the Norway Spruce would be best. Nothing could be better for a screen for buildings, barnyards and other places you wish to hide, than the Norway Spruce.

GOOSEBERRIES—THEIR CULTURE AND PREPARATION.

Mr. P. E. BUCKE (Ottawa) read the following paper:

Having been requested to write a paper on some one of the small fruits, I have selected the gooseberry.

There is no doubt, though this fruit is one of the most valuable it is also one of the most neglected on the list. It is difficult to find the reason for this unless it may be that it is more subject to the attacks of the saw fly than the currant, and consequently the leaves and plants are destroyed before the pest is detected, when grown by amateurs.

In no country has this fruit received so much attention as in the British Isles, where it has been fostered by special exhibitions, by premiums and prizes until the small worthless hedge-row plant—infinitely more insignificant than either of our two native kinds—has been cultivated into an exceedingly fine dessert fruit of the richest flavor and texture.

The attempt to introduce the English varieties into this country, and the failure in doing so, owing to the mildew, which is produced by the unsuitableness of this climate which destroys the fruit and foliage is too familiar to all cultivators of this plant to need any notice from me. It is now conceded we shall have no really first-class berries until we begin *de novo* and work up our native fruits as have been done in the Old Country. From the two varieties we may confidently expect the same gratifying result that has been there (in Britain) obtained.

The Houghton, Smith's and Downing are all advances on the native stock, and it is not improbable that any one of these may be in the direct line of future success, though a cross between the smooth swamp berry and the prickly high land variety would give the initial start to a new and hardy strain, which could subsequently be improved, upon the Van Mons system, with high cultivation or by an admixture with the finer sorts by hybridization. The first object to be gained in a plant perfectly capable of resisting mildew.

Why the gooseberry is so little written or spoken about it is hard to say; its value is undeniable. Either for stewing in the green or half ripe state, and for canning or preserving it has no rival in my estimation. It has an acid of its own which the system

Seems to crave for during the long winter and spring months, before the fresh fruits of early summer can be gathered. Its season is longer than any of the fruits used only in their ripe state, besides which it is handled without loss or damage from carriage and will remain bright and fresh for many days after it is gathered. The price obtained is remunerative, being from twenty to forty cents per gallon. The bush itself is perfectly hardy, resisting the cold of winter and the drouth of summer with as much indifference as a telegraph pole. It may therefore be cultivated in northern regions where the raspberry and strawberry would utterly fail.

Owing to the little attention given to its cultivation the market is never overstocked. Even with the varieties we now have, and a superior berry would open out a much wider range. The bushes come quickly into bearing, the crop is annual and abundant, they have no "off" years, it is only required to keep the soil well cultivated so that no grass or weeds are allowed to choke the plants. It must be remembered that if a full crop is expected plenty of manure must be added to the soil annually, or as occasion requires. It will not do to expect everything and give nothing in return.

The great natural enemy of the gooseberry is the saw fly, or as it is usually called the currant worm. This insect usually attacks the gooseberry a day or two before it appears on the currant bushes. No attempt should be made to cultivate this fruit until a supply of hellebore or Paris green has first been secured to meet the attacks of this dreadful destructive pest. It would be well if the first application be made to the bushes just as the blossoms begin to open in early spring, before any sign of the insect appears. There is no insecticide that can compare with Paris green. This remedy is so dangerous in the hands of unskilled manipulators that I hesitate to name it in a mixed audience, least it may be misapplied. The proper way to apply it is to put a small teaspoonful of green into a pail of water—a tin pail should be used as the green sticks to a wooden pail—keep the mixture well agitated and apply with a common hand whisk or a bundle of twigs tied together.

Water adds greatly to the weight and bulk, but I would strongly object to mix the poison with any dry material, as is done when applying it to potatoes. Care should be taken to keep the green in properly covered boxes, placed out of the reach of children, and to see that the vessel from which it is used is thoroughly cleansed each time after it has been employed.

The gooseberry is not so readily propagated by cuttings as the currant. It is therefore found necessary to mound up the bush with rich earth, or peg down the branches, when they will readily take root if brought in contact with the soil. This should be done as soon as the crop is gathered, and the earlier this is done—say the end of June—the better, as at the time mentioned if the berries are picked green for tarts and stews they can readily be disposed of. When the crop is removed the ground is gone over lightly with a digging fork and loosened, some old, well rotted manure is added if necessary to the soil. The branches are then placed in contact with the fresh mould. By the end of October, if the season is moist, the branches are cut off and taken up with care, the ground having again been first loosened with the fork, so that the bark may not be striped from the young roots. The plants are then divided with a sharp pair of pruning shears, any twigs that have roots on them will strike freely. These are set in rows for one or two years when the plants are ready for sale.

New varieties of gooseberries are produced from seed. The finest of good shape are selected when ripe, these are rubbed between the hands with dry sand, to separate the seeds, which should be sown in a bottomless box set in good rich earth. The young plants will appear the following spring. They must be kept free from weeds. When they show a few leaves they are pricked out four inches apart in rows, those with the largest leaves and of the most thrifty appearance being selected. Perhaps three or four plants in every hundred may show signs of improvement, the rest are rejected. Those retained are then planted out to fruit. When the berries appear the best are again selected for further experiment. It will thus be seen that raising new varieties from seed is rather a tedious job, to which two drawbacks are added. First, with all one's labor no real advance in bush, bearing, berry, size or quality of fruit may be obtained; and secondly, if something really valuable is produced there is no means of protecting the

discovery, so that the party originating it may reap all the advantages that should accrue to him for the time and labor expended. Before any plant becomes an unqualified success it has to be tested on various soils and in different climates, and therefore has to be placed in many localities, whilst undergoing the process of trial, the plant may get into unauthorised hands and so be lost in a great measure to the discoverer. Should he, however, succeed in sending it out unpreserved, so soon as he begins to sell, the methods and appliances nowadays for propagating plants are such that experts will buy the first few plants at a high price and in a year or two will undersell the originator with his own production.

This is not a paper on "Protection," but I think this Association should lend its aid in endeavoring to devise some means for securing to an originator of new and useful varieties of plants a full and unqualified property in them to himself for a certain number of years.

Hitherto the Smith and Downing were the leading gooseberries on the market practically free from mildew; to-day I show specimens of the "Autocrat," a new berry a long step in advance of either of the former both in size and productiveness. It has never been known to mildew, though in my ground I have utterly failed with the White-Smith and several other foreign varieties.

The bush is healthy and thrifty, the foliage is of darker green than those mentioned, whilst the plant is of a stiffer, stockier growth. Our secretary, to whom I sent plants a couple of years ago (and also Mr. Robinson, of Owen Sound) can probably testify to its merits. Mr. W. W. Hilborn, of the Experimental Farm, who has seen it growing with me is quite interested in this new candidate for public favor. It is altogether likely the Autocrat will be placed on the market next spring, as a limited number of plants have been propagated.

The SECRETARY showed a specimen that he had grown at Grimsby from a plant sent by Mr. Bucke. In thriftiness of growth, and in every respect, it is everything that is claimed for it. He was sorry Mr. Bucke was going to change the name of the King Conn to the Autocrat.

Mr. BUCKE.—Mr. Hilborn asked me to change the name. It was suggested that it would take better under another name.

Mr. BEALL.—I am very much afraid Mr. Bucke is introducing an old variety by a new name. I am perfectly satisfied I have seen them ten or fifteen years ago. I thought I saw it at Peterboro' when our meeting was held there.

Mr. BUCKE.—I do not claim it as a new berry, but I think it is a berry that should be grown in this country. We cannot find the origin.

Mr. BEALL.—Why not bring it out under its proper name?

Mr. BUCKE.—It has no name. I call it the Conn from the man I got it from, but it has no name.

Mr. BEALL.—If it gets into a good speculator's hands there will be thousands, and tens of thousands sent all over the country for a high price, when it might be obtained perhaps for one-tenth part of the money.

Mr. BUCKE.—That is what we want.

Mr. BEALL.—Then, in a year or two we shall have the Government coming down upon us, saying, "We have done a great deal to protect farmers from frauds, but here the Fruit Growers are defrauding them themselves."

The SECRETARY.—Does Mr. Beall think it is an English variety?

Mr. BEALL.—I do.

The SECRETARY.—But the English berries all mildew in this country—or, at least, most of them.

Mr. BEALL.—Some of them; and that may mildew too.

Mr. LITTLE.—The Industry is not free from mildew.

Mr. BUCKE.—I have no desire to defraud anybody, but I want to see that berry propagated.

Mr. BEALL.—I can find many persons who will say that the Whitesmith will not mildew. I grew the Whitesmith for fifteen years in succession constantly, and had enormous crops, and not a sign of mildew ; but, by-and-by the mildew came and destroyed everything. One year I planted two or three bushes of Whitesmith, and they are all mildewed. I gave a dozen to my daughter-in-law, and they are planted out in her garden ; there was no protection given ; she is a very poor gardener ; they have been neglected continually ; but they have borne excellent crops every year, and not the slightest sign of mildew. They are the bushes out of the same nursery rows.

Mr. BUCKE.—We have sent this around—to the Secretary, to St. Catharines, to the Experimental Farm—and we want to see if it will mildew.

The PRESIDENT.—I have tested a good many varieties of English gooseberry, and I have found that they mildew, and I have been very loth to recommend any one to go into the culture of those varieties to any extent ; but we find sectional differences with gooseberries as we do with other fruit. I have seen several English varieties around Stratford succeeding admirably, with no sign of mildew whatever. There is one point Mr. Bucke brings up in his paper, as to the Association protecting the originator of a fruit for a certain number of years. So far as I am concerned—and I think I voice the feelings and the principles of the Fruit Growers' Association—I say our principle is not that. We like to see a certain amount of protection ; we like to see an individual that has energy to go into the cultivation, and propagation, and introduction of something new—an improvement on some fruits we have—we like to see them succeed and make money ; but our object is more to introduce and recommend varieties of the highest excellence for the different sections of our country ; and we want to see growers obtain those varieties at the lowest possible price. Where we have varieties that are of a high state of excellence, and generally useful in the country, we want to see them propagated largely by our nurserymen and spread over our country ; and we want to see our growers get those varieties that are best suited to their particular section or location, at the lowest possible price. I, for one, do not feel like offering any particular line of protection in that respect, but leaving the matter to take its usual course. I feel a desire—as I believe the rest of us do—to see anything that is good come to the front as rapidly as possible.

Mr. DEMPSEY.—With respect to introducing a gooseberry that we are satisfied is an old variety under a new name, I can see at present no objections to it. We have only to look down the list of names of some of the best pears we have in cultivation, and we see a great many synonymous names attached to them ; and that goes to prove that those varieties of fruit have been sent to the different parts of the world, and there the labels were lost, and new names have been given to them ; and those names are following them, but we have the same fruit still. The Bartlett pear, for example, is not the Bartlett at all ; and as honest Britons I have always argued that we should not call it the Bartlett ; because it originated in England, and was imported from England by a man of the name of Bartlett living in Boston. With respect to protection, I differ materially from our President. In protecting the person that produces new fruit you protect the farmer and everybody. We heard yesterday of apples sold by nursery agents for Walbridge and Wealthy, that were not those varieties. That was because there was no protection allowed the originator of those varieties. Now, if the originator of a new fruit had an exclusive right to propagate and send out, he could hand it over to a nurseryman to propagate it ; he could propagate it just as fast as fifty or a hundred nurserymen would, and no danger of those frauds at all ; and the farmer would be protected as well as the producer of the new fruit. I can assure you that producing new fruits and new flowers is the most discouraging business, from a financial standpoint, that anyone can undertake. I have spent a lifetime in this way so far, and have not much more life, I think sometimes, to spend ; but the balance will be spent the same way. I have succeeded in originating some very fine fruits indeed. I have got some on hand ; but really, for all that has ever slipped out of my hands I have not had a dollar yet. (Hear, hear). Now, I have been working for whom ? For the protection of those miserable—I may say thievish—

nurserymen. They are not all that. (Laughter). I am proud to say there are a few honest ones but I tell you that as a rule, those men that are so anxious to speculate on another man's labor, will do it without character, because they lack it. I contend that for ten years after a man begins to send out a new article it should be his right ; no other person should be allowed to send it out except himself. Now, we heard a lot about Fay's currant. I can show you the old Red Dutch currant on my premises, bought for \$1.50 a plant, and the man pretends to be one of the most respectable nurserymen in the State of New Jersey that sent it to me. So it goes There is not a class of people in the world that is defrauded so much as fruit growers ; and there is not a class of people that get defrauded by another party more than the farmers get defrauded sometimes by nurserymen. I agitate protection because I want it. If I had had a little protection, I could hand you, I believe, the best pear you ever saw in two years ; but I am holding it ; and what is the use of holding it ? I hope to see the day when we will have a little protection for it. I believe that the best apple we have, taking all things into consideration, for dessert apple, I have produced ; but I ain't going to get anything out of it at all ; it is out of my hands, and it has been sent out this year ; and I am sure that some people that buy it at a high price won't get the article at all, just for the want of this protection. So here are two sides to this question ; and we want to look at the side that is likely to protect the farmer, or build up the character of the nurserymen by removing that temptation from them.

Mr. BUCKE.—Why should not a man have profit in his plant as well as in his book ? Mr. Dempsey has spent nearly his whole lifetime getting up new fruits. What has he got for it ?

The PRESIDENT.—I do not see any difficulty in this matter at all. I stick firmly to what I have said already. I know Mr. Dempsey has originated a large number of varieties of fruits. He has got a pear now equal, if not superior, to anything we have in cultivation, as far as I have seen of it ; and I believe that Mr. Dempsey is going to make money out of that. I hope he will make a fortune out of it ; he deserves to ; he has got a grand pear. It is a cross between a Bartlett and the Duchess d'Angoulême, and it bears the qualities of both, with the points of excellence in both ; and I believe the originator of a fruit of that sort has the protection within his own hands, by propagating and selling direct from his own grounds ; and our Association then steps in ; we know that man ; we know that he is propagating that, and we can recommend that ; but as far as throwing any further protection than that around the originator, I do not see how the Association can step in there at all. We want to propagate that fruit. When Mr. Dempsey asked me what he should name it, I told him to call it the Dempsey pear.

Mr. BEALL.—Would it not be a nice thing for you, Mr. President, to approach the Government of Ontario, and get them to get Mr. Dempsey to propagate enough to give one to each member of our Association in 1891, and to pay Mr. Dempsey for the same, \$2 a-piece.

Mr. LITTLE.—I don't see how Mr. Dempsey would reap anything out of that, because there are men that would not think anything of giving \$5 a tree for Mr. Dempsey's pear in a few years.

Mr. DEMPSEY.—I would jump at that offer that Mr. Beall is talking of.

The PRESIDENT.—Ladies and gentlemen,—I do not see that there is anything else before us. The regular programme as printed is complete. Every question has been discussed ; and although the audience has been very small on this occasion, still, so far as I can see, they have been an appreciative audience, and we have had some good words from those located around Seaforth ; and I hope they have all benefited by our presence here. We certainly have benefited by the information we have received. We are extremely obliged to the residents of Seaforth for providing us with this Hall and general accommodation, and we hope on some future occasion we will reach this section again.

Mr. ELLIOTT hoped that those who had attended would go home and put into practice what they had learned.

The Association adjourned at noon, to meet in winter at Windsor.

REPORT OF COMMITTEE ON FRUITS SHOWN AT SUMMER MEETING AT SEAFORTH.

Your Committee have examined the following fruits, roses, etc., shown by members of the Association and others, and beg to report thereon.

The Secretary showed a very fine specimen branch of the Great Biggarreau cherry, fruit fully ripe, also a branch, not quite so heavily laden, of the Napoleon Biggarreau fruit, only partially ripe. He also showed a specimen branch of the Yellow Spanish cherry, the bearing qualities of which do not appear sufficient to commend it for general cultivation, though it is in flavor quite equal to the other varieties shown.

The Secretary also showed specimen branches of the Fays and Cherry currants, nearly ripe, and attractive samples of the Logan, Jessie and Filches Prolific strawberry; also very fair specimens of the standard varieties of gooseberries.

Mr. Bucke, of Ottawa, shows a few specimen varieties of gooseberries, among them being the "Conn" or "Autocrat," evidently a berry of great promise judging from its size and bearing qualities, and freedom from mildew.

Mr. Gowanlock, of Seaforth, shows some very good samples of Fays, Cherry and White Grape currants in a green state, and several varieties of gooseberries, among them the Industry; free from mildew and of good size.

Mr. Morton, of Wingham, shows some very excellent specimens of the Crown Bob gooseberry in a green state, and Mr. D. D. Wilson of Seaforth shows two bunches of last year's grapes, Roger No. 15 and No. 44, preserved in sawdust at a low temperature. The fruit showed no signs of decay nor shrivelling of the skin.

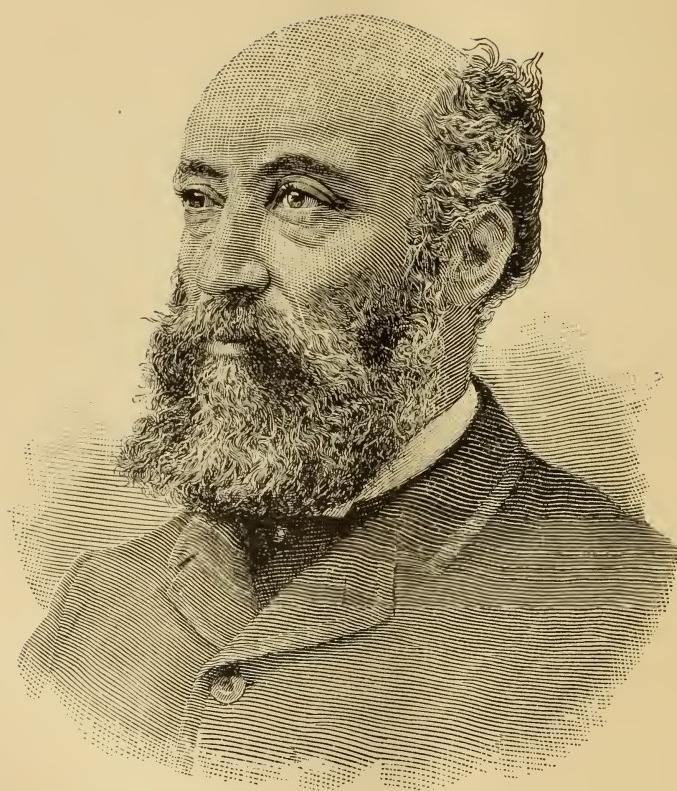
In roses Mr. Thomas Beall, of Lindsay, makes an attractive display, showing among his collection specimens of the Duke of Edinburgh, Madame Plantier, Le Rhein, Jules Margottin, (fine rose with splendid dark foliage), M. P. Wilder, Eugene Verdier, Caroline de Sansal, Coquette des Alpes, Lena Turner, Cabbage, Common Moss, and a few other varieties of more or less merit for outdoor culture. Taken as a whole Mr. Beall's collection deserves more than a passing notice, and your committee highly commend his efforts and success in the cultivation of this the "Queen of Flowers."

The Secretary also showed a very choice collection comprising the Paul Neyron, La France, Sir Garnet Wellesley, M. P. Wilder, Madame Plantier, Gabriel Tournier, Anna de Diesbach, and Alfred Colombe, all desirable roses, and a number of other varieties of lesser merit.

A few specimens of unnamed roses were also shown by Mr. Gowanlock of Seaforth.

T. H. RACE,
A. H. PETTIT, } Committee.

Seaforth, Ontario.



ALEXANDER McD. ALLAN,
President 1885-1889.

A P P E N D I X.

ADDITIONAL PAPERS.

FRUIT GROWING IN THE NIAGARA DISTRICT.

The following paper was read at the Lincoln farmers' institute gathering, held at Smithville on January 9th and 10th, 1889, by Mr. A. M. Smith of St. Catharines:

The most of us recollect the time when fruit growing for profit, or as a staple crop, was confined to a few localities and individuals, the general farmer taking no interest in it. But now, in many sections of our country, it is becoming one of the leading industries, and instead of importing a large amount of fruit to supply our home market, they are well supplied with fruit of our own growing. Besides this, we annually export half a million dollars' worth of fruits to other countries, and the production and demand, too, is constantly increasing. The quality of our fruit, particularly apples, is second to none in the world, and the increased facilities for transportation, together with the improved methods of preserving fruits for shipments long distances, such as canning and evaporating, is opening up markets hitherto unaccessible to us. The settling up of our vast territories where fruit can not be grown successfully, and which will demand our supplies, all indicate that this industry is but in its infancy ; that it is one which demands our attention, and that the discussion of subjects connected with fruit growing at meetings of this kind should interest every farmer, whether he be a fruit grower or not. About thirty years ago, when I first began the fruit and nursery business at Grimsby, fruit growing for profit was scarcely thought of. Such a thing as shipping fruit, even to our own towns and cities, except in the shape of sun and kitchen-tanned dried apples, was entirely unknown. When I planted 5,000 or 6,000 young trees in my first nursery the old farmers shook their heads and said, "The boy must be crazy, what in the world will he do with them all ? We don't want them here—we have already more fruit than we can use." But a few of their more hopeful sons thought there might be something in fruit growing, and they planted out young orchards and some small fruits, and grafted up some of the old trees, and what has been the result ? We got the express company to establish an office there and commenced shipping small fruits and peaches to our own towns and cities, which had hitherto been supplied with these luxuries from the States ; we induced buyers to come from the States to buy our apples, which they soon found were superior to their own ; we began sending some to the Old Country, and in a few years Grimsby township alone was sending away \$30,000 to \$40,000 worth of fruit annually, and Grimsby became famous as a fruit-growing section, and the business has now spread nearly all over the Niagara district. But I was to say something about "Failures in fruit-growing among farmers ; their cause and remedy." You know that men in some respects are a good deal like a flock of sheep ; if one of the flock jumps over the fence into the clover, the rest will follow pell-mell without regard to consequences. If one man happens to make a lucky hit, or falls into a good thing to make money, his neighbors are pretty sure to follow, whether they know anything about the business or not, and consequently it is overdone, or those who don't know anything about the business "get left." This has been especially true of fruit-growing, and has been the cause of a good many failures. Not that the business has been overdone, except perhaps in a few lines and instances, but because so many have gone into it that know little or nothing about the business. I stated before, and you know the fact, that Grimsby and the Niagara district have become famous

for fruit-growing. Men in other parts of the country and in some of our cities have heard that farmers have got rich off of a few acres of land in a few years, and they have fondly imagined that if they could jump into Grimsby or somewhere near it, they could soon fill their pockets and retire. Men have left good grain and stock farms, and others good businesses in the city, and invested in Grimsby or Niagara land, not dreaming but what all land there was fruit land, and thinking that all they had to do was to invest a few dollars in trees, dig holes in the ground and plant them, sit under the trees for a few years, and the fruit would drop into their laps and the money roll into their pockets. But many of them have had the illusion dispelled; they have found out that all of Grimsby or Niagara is not fruit land—except it might be fruitful in growing frogs, or in material for making bricks—and even where suitable land has been secured they have found out that trees will not grow by simply sticking them in the post hole and leaving them to take care of themselves. They did not understand the business, and the same is true of a good many farmers who live in fruit-growing sections and fail in growing fruit. They don't understand that the following rules or conditions must be observed in order to be successful, and this is the main cause of their failure: First, they must have soil and climate adapted to fruit-growing. Second, they must have varieties of fruit adapted to that particular soil and location. And then the trees planted should be carefully planted, cultivated, pruned, protected and fed. To illustrate: I have seen farmers who have decided to go into the fruit-growing, select the poorest field they had on the farm for the purpose, because it was more convenient to the house, or because they wanted others for pasture, for growing roots, or for some other purpose. And these same men generally consult some travelling tree agent in regard to what varieties they shall plant, or select from the stock of pictures which he carries, instead of consulting some reliable horticultural work, or some man who is posted and knows what will succeed in that particular locality. These men invariably get the varieties that the agent wants to get rid of, or that he can make the most money out of, whether they are adapted to the locality or not, and they are not over particular in planting out their trees. Instead of digging holes large enough to straighten out all the roots and fibres, and then carefully filling in and preparing the earth around them, or, if it is dry, throwing in a pail of water to settle the soil about them, they dig a small hole, crowd in the roots, throw on a little dirt, and if they die blame the nurseryman or the weather for it. Their after-culture is sometimes a crop of grain sown around them, and sometimes they are left in sod, instead of being hoed and cultivated as they should be. As for the pruning and trimming they get—well, that is generally left to the animals on the farm, and it is done by horse or cattle power until there is little left of the struggling tree. Is it any wonder they fail? But you say, perhaps, that careful cultivators sometimes fail—even those who have complied with all the requirements I have mentioned. Granted, and so do careful cultivators of grain and other products sometimes fail from causes beyond their control, but as a general thing where you find failures, there has been one or more of the rules mentioned violated. I have seen, and had in my experience, good selections of soil and varieties made in grape vines and small fruits, and had them carefully planted, cultivated and trained, and they did splendid the first season, but they were all destroyed the first and second winters after planting for want of proper protection or covering to the roots; and I believe that this is the cause of more failures in the growing of small fruits and grapes, and even peaches, quinces and some varieties of plums, pears and apples, than we are aware of. Take some of the winters we have had in this section during the past five or six years! When

there has been very little snow, and what there was blown away from the fields by the wind, and not much moisture in the ground to counteract the effects of the frost, and the thermometer 10 to 16 degrees below zero, and the ground frozen three to four feet deep, is it any wonder that the tender roots are injured or killed? I have seen the roots of blackberries and grapes, quinces, and young walnut trees even, killed by the frost, while their tops were apparently uninjured. I have even taken cuttings from these same grape vines and propagated them, thus showing conclusively that the tops were sound; and I have seen vines and trees throw out leaves in the spring, and then die and wither away, and on examining the roots found them dead and rotten. The remedy for this is to cover the ground around the trees and plants in winter. A slight covering of coarse manure straw, cornstalks, evergreen brush, or anything to hold the snow to keep it from blowing off, will be a protection, and where these are scarce, a crop of rye sown early in the fall among trees and vines affords an excellent covering, and it may be turned under in the spring, and will make a good fertilizer also. But the most permanent protection is a good evergreen hedge that will stop the force of the wind and keep the snow from blowing off. I have a hedge of Norway spruce on the west side of my place, and about five years ago I planted a vineyard along the east of it. The vines grew well the first summer, but the following winter was a dry, severe one, with very little snow, and the result was that three or four rows of vines beyond the protection of this hedge were every one killed by the frost, while those near it and under its protection all came out sound and have grown nicely, and never fail to produce an abundant crop. A neighbor adjoining planted a vineyard on similar soil the year following, and has given them just as good cultivation and care, all but the protection, and to-day he has not a healthy vine except a few in a low place in the field where the snow has drifted in and protected the roots. I have seen similar results even from the protection of a row of currant bushes. A few years ago I visited a young vineyard belonging to Peter Wright, in Stamford, a portion of which was almost entirely destroyed by freezing the previous winter, but the remainder had been planted with alternate rows of currants, which had broken the wind, retained the snow, and saved the young vines. I could cite similar cases amongst peach, quince and dwarf pear trees. In one instance tomatoes had been grown in a peach orchard and the vines raked off and thrown around one row of trees, and the adjoining trees had been plowed around and the ground left bare. We had one of our dry, bleak winters, with very little snow, and nearly every tree where the ground was bare was killed, and those that were protected with the tomato vines came out all right. I saw a remarkable instance this last season in an apple orchard belonging to Mr. D. Vanduzer, of Grimsby, which I can attribute to nothing but the protection of the roots. There had been a strip left for a road through his orchard alongside of a row of Baldwin apple trees, on which the grass had grown for several years, extending up to the trees; the opposite side had been cultivated, and the ground had been left comparatively bare the previous winter. On the side where the grass was, a healthy growth and a good crop of apples all along the row, while on the opposite side there was scarcely any fruit and the leaves had a sickly appearance. We all know that our fathers had no difficulty in growing any fruits they planted. I have dwelt upon this subject of protection at some length because I believe it to be of importance, and the want of it to be the cause of a large proportion of the failures in fruit-growing. I would like to say a word or two about feeding trees and plants. None of you would expect to be successful breeders or stock-growers without a judicious system of feeding your stock; nor would you expect to be successful in growing grain or any other crop without sufficiently fertilizing the soil, or giving the plants suitable

plant food. Yet farmers in the treatment of their orchards seem to forget the need of this when they crop their orchards year after year and don't give them half manure enough to feed the crops they are taking off, forgetting that the trees require the full strength of the land, and should have a double supply of nourishment instead of being robbed of what little they have. Is it any wonder that we hear of orchards failing to bear? The remedy for these kinds of failure is easily seen. Don't rob your trees of the food that belongs to them, and instead of carrying it away in hay, grain and other crops, give them an extra supply in the shape of barnyard manure, unbleached wood ashes, bone dust and other fertilizers.

CO-OPERATION BETWEEN THE FRUIT GROWERS' ASSOCIATION OF ONTARIO AND THE FARMERS' INSTITUTES.

The following paper was read by the secretary of the Fruit Grower's Association of Ontario, at the Central Farmers' Institute, Toronto, February, 1889:—

For some time past I have been advocating closer sympathy and co-operation between the different branches of work which come under the care of the Department of Agriculture, and now that we have a Minister of Agriculture who takes a deep interest in furthering every movement which fosters the prosperity of our Canadian farmers, what may we not hope for in the near future? Nothing I am sure, short of the elevation of the farmer to a position of affluence and respectability, equal to and perhaps surpassing that of those who are engaged in the so called learned professions.

One of the grandest movements of the day for accomplishing this end is the establishment of farmers' institutes for the education of farmers in scientific agriculture. The Agricultural College is doing a grand work for the young men of Ontario, but to diffuse education still more widely we must carry it to the very doors of the farmers, and meet them where they will feel free to question what is said if it is not in accord with their own experience. And this is exactly the work of the farmers' institutes.

The Fruit Growers' Association of Ontario has been trying to accomplish the same end, but, of course, limiting its attention to the cultivation of the garden and orchard, and the care of wood lots. For thirty years we have been meeting two or three times a year in the various parts of Ontario collecting and disseminating useful information on these subjects, and I claim that in that time we have stored up in our annual reports, and in the pages of our useful journal *The Canadian Horticulturist*, a vast amount of most useful information, just such as every farmer should be in possession of. Yet although we have grown in numbers from a membership of about a dozen to over two thousand in number, still our two or three meetings each year, are wholly inadequate for the rapid diffusion of that knowledge among those who are not members of our Association, and who consequently do not receive our report.

I am aware that many persons will argue that the farmer should devote himself entirely to one line of agriculture, and to that only. I grant that such a plan might tend to bring about the highest state of perfection in the agricultural profession, yet mixed farming will often be found the most expedient; giving

returns from one department when others fail. I claim that in very many cases farmers are so situated that it would pay them, from a purely commercial point of view, to take up some one line or other of fruit culture. Personally I would prefer that all farmers would wholly avoid this line of industry, and leave it wholly to those who, like myself, have devoted their whole farms to fruit culture, and make a specialty of it only. No doubt that, on the whole, such a division of labor is most advantageous; farm crops and fruit crops often come in conflict and one or the other must suffer neglect. Nevertheless, a farmer may be situated near a good market for fruit products, or he may have ground so well adapted for garden crops, that an acre devoted to small fruits, vineyard or orchard, may net him more ready cash than twice or thrice that amount of land in an ordinary field crop. In such a case, all that he lacks, in order to make the most of his ground, is to have reliable information concerning the best varieties to purchase, the proper culture of the plants or trees, and the best method of handling and marketing his fruits.

Even for home uses only, I claim that every farmer should have a fruit garden of liberal extent, so planted as to give a bountiful supply of fresh fruit of various kinds, for the use of his family in every month of the year. This is no impossibility, for it is quite possible to have luscious pears on the table for dessert during nine months of every year, and small fruits in succession for at least four months of the summer, and by a proper selection of varieties to have the health-inspiring grape, fresh and plump, during eight months of the year.

Now, such particulars as these, are those to which our Association has given the closest attention and which we are endeavouring by every means at our disposal, to make public, in accordance with the object for which it was originally formed, as is set forth in article 3 of our constitution, which reads as follows:—"Its objects shall be the advancement of the science and art of fruit culture by holding meetings for the exhibition of fruit and for the discussion of all questions relative to fruit culture, by collecting arranging and disseminating useful information, and by such other means as may from time to time seem advisable."

It has been proposed that we dispose of at least one meeting of our Association proper, and that our directors, of whom there is one for each Agricultural division of Ontario, should each be prepared to attend as many meetings of farmers' institutes each year as possible, and give a paper or an address on such subject in practical fruit culture, as shall appear best suited to the locality in which the meeting is held.

These subjects treated by our best practical fruit specialists, and accompanied by the usual cross-questioning, at some fifty or sixty meetings of institutes every year, will I am sure, tend toward advancing the fruit industry of our country, an industry the importance of which may be imagined when we note that according to the last report of the Bureau of Industries, the value of the fruit exports of Canada in the year 1887, alone, amounted to the sum of nearly \$1,600,000.

I may add that this plan has been experimented upon in a small way during the past year, and our directors, as far as they have gone out, have been most heartily welcomed by the farmers, who have taken a very lively interest in the subjects of their addresses.

It was moved by Mr. Clarke, seconded by Mr. Campbell, that the thanks of this meeting be tendered to the Fruit Growers' Association of Ontario for their offer of assistance in the work of the Farmers' Institute as set out in the paper of Mr. L. Woolverton, just read, and this meeting desires to express their thorough appreciation of the benefit that will accrue to the Farmers' Institutes by such assistance. The motion was carried.

SPRAYING WITH THE ARSENITES.

The following paper was read at Toronto, August 26, 1889, before the Society for the Promotion of Agricultural Science, by Professor A. J. Cook, of the Agricultural College, Michigan:—

Nine years ago, at the first meeting of this society, I presented a paper upon the use of Paris green as a specific against the codling moth.

In that paper I gave the results of careful and elaborate experiments, which settled two facts which were very important in economic entomology: First that Paris green was efficient as a preventive of the ravages of the codling larva; and secondly, that such use was entirely safe in respect to poisoning the fruit. To-day, less than a decade from the date of the discovery of this remedy, this method to combat the worst insect pest of the apple grower is generally adopted by the more intelligent orchadists of our country. Its value is now universally conceded. Easy and cheap methods to apply the insecticide are now known and generally adopted.

For several years myself and others have been experimenting, in hopes to find that this same insecticide was equally efficient to destroy the plum curculio. For six or seven years I have sprayed plum trees once and even twice with no apparent good. Test trees, close beside the trees sprayed, and that were not treated, were as free from attack as were the trees that were sprayed, and the trees treated were no more exempt from attack than the others. Thus I was convinced that this insecticide was of no value in this curculio warfare. Several of my horticultural friends, in whose ability to experiment and observe correctly I had great confidence, had tried this remedy with *very satisfactory* results. In 1888 I studied this matter very closely, and concluded that as the plum is a smooth fruit, with no calyx cup like that of the apple, in which the poison may lodge, and as the curculio lays its eggs anywhere on the smooth rind, the poison would be very easily washed off, or even blown off by the wind. I thus concluded that my want of success was very likely due to a want of thoroughness. In 1888 I sprayed certain trees three times, at intervals of eight days, and omitted to treat other trees close along side. The benefit from spraying was very marked.

I also found that carbolized plaster—one pint of crude carbolic acid to fifty pounds of plaster—was quite as efficient to repel the curculio as was the arsenites. This was also applied three times. The season was very dry, and there were few or no rains to wash off the insecticides. This year I repeated the experiments both with the London purple and with the carbolized plaster, but with no success.

All the trees were severely attacked, and all the plums lost. This year we had almost daily rains, which were frequently quite severe.

I believe I am warranted in the following conclusions: The arsenites and carbolized plaster will protect against the plum curculio if they can be kept on the tree or fruit. But in case of very frequent rains the jarring method will not only be cheaper, but much more effective. Again, as our wild fruits are more cleared away we must have plums in our orchards to protect the apples from the curculio. When apples are seriously stung they become so gnarled and deformed as to be worthless. It will pay, then, to set plum trees near by or among the apple trees. Then we will escape mischief among our apples from the curculio, and will only need to spray our apples once, to destroy the codlin moth, and can treat the plum trees three or four times with Paris green or carbolated lime in case we have only occasional showers, or can jar the trees when the rains are very frequent. For the apples we can use London purple, one pound to 200 gallons of water. For the plums we must use Paris green, one pound to two or three hundred gallons of water. If the carbolated plaster is preferred, we use one pint of crude carbolic acid to fifty pounds of lime plaster. This is thrown freely over the trees so as to strike every plum on the tree, which is being treated.

Another very important practical point has been suggested by the past season's experience with these insecticides: I refer to the danger of applying them before the blossoms fall. Bees are quite as susceptible to these poisons as are the codlin larvæ and curculio. In their good work of collecting nectar and fertilizing the blossoms, they are very certain to take the poison as well, if the trees have been sprayed. Of course there is no excuse for spraying at so early a date, as neither the curculio or codlin larvæ commence their attack till the blossoms fall. Thus for the object in mind, as well as for the safety of the bees, delay should be insisted upon. I think we as scientists and all educated men should pronounce vehemently and with one voice against spraying our fruit trees with the arsenites till the blossoms have all fallen. We should even go farther: We should secure the enactment of laws which would visit any such offence with fine and imprisonment. Such laws would prove a ready and active educator.

In the past season, many bee keepers have lost severely from the neglect of their fruit growing neighbors to observe this caution. I will only mention two cases: Mr. John G. Smith, Barry, Illinois, writes: "One of my neighbours owning an orchard of about one hundred acres of apple trees, sprayed the trees with Paris green and water just as they were in full bloom. The result is that ten or twelve bee keepers are ruined." The imago no less than the larvæ and pupæ were destroyed. Mr. J. A. Pearce, Grand Rapids, Mich., was also a heavy loser from the same cause. His bees likewise died in all stages of development.

It is well to remember and to urge that this loss is not confined to the bee keeper, for the fruit grower as well as the apiarist needs the bees and their work to insure his best success. It only requires, then, that our people know the truth, to insure against loss in this direction.

INJURY TO THE FOLIAGE.

Another practical question of no small moment in this use of the arsenites refers to injury to the foliage of the trees treated. In an elaborate series of experiments the past season, we desired to learn the effect on different trees of the different arsenites, and whether the date of treatment and atmospheric

condition had any influence. The following is a tabulated statement of the experiments:

Date.	Variety Treated.	Poison used.	Date of second application.	Time after treatment.	Weather.	Effect.
May 20..	6 plum trees...	Lon'n p'ple 1lb to 200 gal.	June 5..	Ten days	Rain 21,23	No injury.
May 20..	2 cherry trees..	" " "	" ..	"	" "	" "
May 21..	4 apple "	" " "	May 23..	"	" "	" "
May 23..	5 cherry "	" 1lb to 150 gal.	" ..	"	" "	" "
June 7...	3 willow "	" 1lb to 100 gal.	June 12..	"	.....	" "
June 7...	3 elm "	" " "	" ..	"	.....	Some.
June 7...	3 h. maple"	" " "	" ..	"	.....	"
June 7...	5 apple "	" " "	" ..	"	.....	"
June 7...	5 cherry "	" " "	" ..	"	.....	None.
June 7...	5 plum "	" " "	" ..	"	.....	Some.
June 12..	3 elm "	" " "	June 17..	"	.....	Much.
June 12..	3 plum "	" " "	" ..	"	.....	"
June 12..	3 apple "	" " "	" ..	"	.....	"
June 12..	3 cherry "	" " "	" ..	"	.....	None.
June 24..	3 apple "	" " "	.....	"	Rain 25th.	Very bad.
June 24..	3 peach "	" " "	.....	"	" "	" "
June 24..	3 plum "	" " "	.....	"	" "	" "
July 5...	5 peach "	" 1lb to 200 gal.	.....	Five days.	.....	Great injury.
July 8...	2 peach "	" " "	.....	"	.....	" "
July 8...	1 cherry "	" " "	.....	"	.....	Slight.
July 8...	1 pear "	" " "	.....	"	.....	Some.
July 10..	1 pear "	" " "	.....	"	.....	"
July 10..	3 peach "	" " "	.....	"	.....	Very bad.
July 10..	1 plum "	" " "	.....	"	.....	Quite bad.
July 11..	2 peach "	Paris gr'n, 1 lb to 100 gal.	.....	"	.....	Slight.
July 11..	2 peach "	" " 200 gal.	.....	"	.....	None.
July 11..	2 peach "	" " 250 gal.	.....	"	.....	"
July 11..	2 peach "	" " 300 gal.	.....	"	.....	"
July 11..	2 peach "	London purple water....	.....	"	.....	Great injury.
July 15..	3 peach "	W'te ars'ic 1 lb to 300 gal.	.....	"	.....	" "
July 15..	3 peach "	Lon'n p'ple 1 lb to 200 gal.	.....	"	.....	" "
July 15..	3 peach "	Solution analine .....	.....	"	.....	None.

I think we are warranted in the following conclusions: first London purple is more injurious to the foliage than is Paris green; and white arsenic—arsenious acid—is more harmful than is either London purple or Paris green. This is doubtless owing to the soluble arsenic which is quite abundant in London purple, and almost absent in Paris green. In experiment No. 29 (see table) it will be noticed that the colored water after London purple fully settles is very destructive to foliage, while analine (see experiment No. 32) is not at all harmful. This agrees with the experiments of Prof. C. P. Gillette, made in 1888, where white arsenic was found very destructive to foliage.

Secondly, peach foliage is especially susceptible to injury, and cherry foliage the least so of any of the kinds treated.

Thirdly, it would seem that London purple and white arsenic, used just before a rain, are more harmful than when used during a drought. We not only saw greater injury when a rain followed spraying within two or three days, but secured the same results by spraying, soon after treatment, with pure water. This also accords with the view that the injury comes from the presence of soluble arsenic.

Fourthly, it would seem that spraying soon after the foliage puts out, is less harmful than when it is delayed a few days, or better a few weeks. For ten years I have sprayed both apple and plum trees in May, and for several years with London purple; and often used a mixture as strong as one pound to one hundred or even fifty gallons of water. Yet in most cases no damage was done. This year I sprayed several trees in May, using one pound to 100 gallons of water with no damage. In June and July spraying the same trees with a mixture only one-half as strong did no slight injury. This fact, if fact it be, accounts for the few reports of injury in the past, even with a stronger mixture, and the frequent reports of damage within a year or two, even with a dilute mixture. Then the spraying was confined to May; now it reaches to June, or even to July.

Fifthly, London purple may be used on apple, plum, cherry, pear, and most ornamental trees, but on these should never be stronger than one pound to two hundred gallons of water. If the application is to be repeated, as it must be for the curculio, to prove effective, or if it is to be used in June or July, Paris green should be used, in the same proportion as above, or else we should use only one pound of London purple to three hundred gallons of water. I now think that this necessity is more due to time of application than to the fact of increased quantity of the poison.

Sixthly, if the arsenites are to be used on the peach, to defend against the curculio, Paris green only should be used, and that not stronger than one pound to three hundred gallons of water. With the peach the poison is not only absorbed, coloring the tissue purple or brown, but even the petiole or stem of the leaf is weakened, and the leaf falls. Thus in several cases where we used London purple one pound to two hundred gallons of water, or white arsenic, the peach leaves all fell off. White arsenic colors the tissue the same as does the London purple, showing once more that it is the soluble arsenic, not analine, that does the mischief.

Seventhly, the injury done to the foliage is never immediately apparent. It usually shows somewhat the second day, but the full injury is frequently not manifest till the fifth day, and often not till the tenth.

POISONING THE PASTURE UNDER THE TREES.

Another important practical question which I have tried to settle this season—1889—concerns the danger of pasturing under trees which have been sprayed with the arsenites.

A gentleman wishing to spray his orchard, in which he was pasturing seventy-five hogs, consulted me as to the wisdom of doing so without first removing the swine. I told him I believed there was no danger. I said use a mixture, one pound of London purple to two hundred gallons of water, watch your hogs closely and if any seem affected remove all at once, and I will be responsible to the amount of twenty-five dollars. The gentleman did so and reports no damage.

In the following experiments I used the mixture of twice the strength which should be used, that the experiment might be the more convincing. I used one pound to one hundred gallons of water. In every case the spraying was very thoroughly done. Care was taken that every twig and leaf should be drenched.

In tree No. 1 a thick paper was placed under one-half of a rather small apple tree. The space covered was six by twelve feet, or seventy-two square feet. The paper was left till all dripping ceased. As the day was quite windy the dripping was rather excessive. In this case every particle of the poison that fell from the tree was caught on the paper. Dr. R. C. Kedzie analyzed the poison and found four-tenths (.4) of a grain. Tree No. 2 was a large tree with very thick foliage. Underneath this tree was a thick carpet of clover, blue grass and timothy just in bloom. The space covered by the tree was fully sixteen feet square, or equal to two hundred and fifty-six square feet. As soon as all dripping had ceased, the grass under the tree was all cut, very gently and very close to the ground. This was taken to the chemical laboratory and analyzed by Dr. R. C. Kedzie. There was found 2.2 grains of arsenic. Now as our authorities say that one grain is poisonous for a dog, two for a man, ten for a cow, and twenty for a horse, there would seem to be small danger from pasturing our orchards during and immediately after spraying, especially as no animal would eat the sprayed grass exclusively. To test this fully, I sprayed a large tree over some bright tender grass and clover. I then cut the clover carefully, close to the ground and fed it all to my horse. It was all eaten up in an hour or two, and the horse showed no signs of any injury. This mixture, remember, was of double the proper strength, was applied very thoroughly, and all the grass fed to and eaten by the horse. This experiment was repeated with the same result. I next secured three sheep. These were kept till hungry, then put into a pen about a tree under which was rich juicy June grass and clover. The sheep soon ate the grass, yet showed no signs of any injury. This experiment was repeated twice with the same result. It seems to me that these experiments are crucial and settle the matter fully. The analyses show that there is no danger, the experiments confirm the conclusion.

Thus we have it demonstrated that the arsenites are effective against the codling moth, that in their use there is no danger of poisoning the fruit, and when used properly no danger to the foliage, nor to stock that may be pastured in the orchard.

FORESTRY.

The following paper was written by Dr. J. W. Beall, Prof. of Botany and Forestry, Michigan Agricultural College.

WHY NOT PLANT A GROVE?

These few pages on forestry have not been written to secure the applause of those who see little use for a bulletin unless it contain some new truth brought out by conducting careful experiments. On the contrary, they have been prepared with the view to help awaken an interest in the subject by calling attention to a few simple facts in the plainest way possible, and then to give some elementary hints on the selecting, planting and management of young forest trees in groves and screens.

Of the three greatest interests of our country, manufacturing of all kinds ranks first, agriculture second and forestry third.

"The evidence is ample and conclusive that we are making fearful inroads on our forest stores. We are cutting off a much larger crop than can possibly be replaced by natural growth within the period when at the present rate, we shall have cleared the original forest off the ground. We are wasting our forests by the axe, by fire, by pasturage, by neglect. So far as timber is concerned, we are eating into our capital with little care for the future."—Dr. E. J. James in Forestry Bulletin No. 2 of U. S. Agrl. Dept.

We legislate to protect birds and wild game, and appropriate money to encourage a large number of worthy objects, but for "our forests, from which we are drawing a larger amount in natural wealth than from any other source of supply, or from all other sources together, we have so far done practically nothing to protect or cultivate.—Dr. E. J. James.

If something profitably cannot be done in connection with this great subject of forestry, then it is very unlike any other question of great importance.

We feel confident that there are many important points in connection with forestry which should constantly receive a good deal of thought from many of our best citizens.

The writer is now supposed to be passing one of the thousands of good farm houses situated in any of the older settled counties of the State, when the following conversation ensues :

B. "I see the snow drifts have not yet all disappeared."

C. "No, and we haven't had much snow this winter either, and there has been less strong wind than for some years past. Generally, of late years, when there is a heavy fall of snow it is soon so unevenly distributed that we have little idea of how much has fallen. It piles up along the north and south roads, and blows from some parts of the east and west roads. The wheat field has many bare spots, while in other places the drifts are deep."

B. "What do you suppose has brought about this change?"

C. "Since I cut off that piece of timber down there and brought to view the farms over west for a couple of miles, the wind has frequently swept over my fields with a great deal of force, sometimes making things fairly jingle, and when cold the air seems to penetrate the smallest cracks in my pens, sheds and barns. The pigs squeal, the cows give less milk, the horses shiver and even the hen-coop is too freely ventilated. I believe the animals at such times eat more grain and fodder than they do when there is less cold air in motion. The house, too, gets colder in the night than it used to when there were few strong winds. I am sure I have to lay in a larger supply of firewood than I used to."

B. "You seem to take in the whole situation at a glance."

C. "I have seen many changes in my life. When I came to this neighborhood much of the land was still covered with a dense virgin forest. As one block of woods after another disappeared, I noticed the winds became more frequent and penetrating, but what could I do? and what could my neighbors do? We needed the land to raise more wheat and to feed more stock, and we got something for the timber which helped to pay off mortgages."

B. "There is a partial remedy for checking the fierce winds which drift the snows in winter, shake the apples from the trees in summer and lodge the grain before it is ripe."

C. "Yes, I know it. We can let the young trees grow up along the fences of our fields, and we can plant trees west of our farm buildings; but then it would be a great deal of trouble and cost a good deal to plant trees, and we should have to wait so long for any favorable results."

B. "The cost is much less than most persons imagine, and when once started they keep growing year by year, and before you are aware of it, the little trees have grown upwards and spread outwards. Suppose you were to plow a strip a rod wide and ten or fifteen rods long, either in a straight line, in a curve or in an irregular shape. That would not cost much. Then harrow it well as though you were fitting the piece for corn."

C. "Then I should have to go to the woods and find some good trees, dig them, cart them to the house, dig deep holes, set the trees, stake them, mulch them, wait a while, see half of them die and the others would look pale and stunted."

B. "I think you could do better than that. Of course you must arrange the fence so as to keep cattle, sheep and horses away from young trees. Let us see about a plan for a wind-break or for a small grove. You can put in as many kinds of trees as you like, the more the better, if you want to try experiments and think you would like to study them and learn their habits, but if you want trees that will grow fast, that are likely to remain healthy and furnish protection, you need only one, two or three species which are best adapted for the purpose. We can't afford to go to the woods and dig trees. We can buy them cheaper."

C. "Buy them! Why, a nurseryman will charge me twenty-five to fifty cents apiece for his evergreens. I can't afford that."

B. "Procure small trees; they will cost much less; they can be more easily planted; will be more likely to live and after a few years they will very likely catch up and overtake trees which were larger at the time of planting. The foundation of your screen will consist of evergreens. If others are added which are not evergreens, they should not be put in blocks each sort by itself, but mixed more or less in checker-board style with the evergreens. And the evergreens may as well be mixed if no others are planted. You will want to set them in rows, straight, curved or crooked in one way four feet apart, and three or four feet apart in the row, so they can be as easily cultivated one way as corn and potatoes. There is little risk in setting too thickly, and the trees will sooner shade the ground.

"R. Douglas & Son, Waukegan, Illinois, will send by mail:

"White pines, 3 years old, @ \$1.00 per 100, or \$8 per 1,000.

"Norway spruces, 3 years old, @ 75 per 100, or \$6 per 1,000.

"At about the same price, you can procure any or all of the following: European larch, white ash, American elm, black cherry, black locust and many others, remembering that for good screens half or more of the trees should be evergreens rather equally distributed over the ground. W. W. Johnson, Snowflake, Antrim Co., Michigan, will doubtless send young trees at the above prices. A single row or two rows will make a good screen, but you will be better pleased with a wider strip of trees."

C. "I will send a postal card right away and get the price lists from those two men. It won't cost much to start a screen in that way. Tell me more about setting the trees, as you seem to know concerning such things."

B. "The trees arrive about the time you are sowing oats. Open the packages, and place the roots in damp soil in the shade, not forgetting that the roots of trees are unfitted by nature to stand the air. In the wind or the sun or in dry air, or in the open air, roots will live just about as long as a black bass will live out of water; not much longer. Prepare some thin mud in a pail filling it a third full. In this mud place the roots of the trees one sort at a time. Of course you have staked or marked out your ground. Dig a small hole with a spade and let the boy drop a tree in the hole; straighten it up; replace the soil, not omitting to step your full weight with one foot each side and near each tree before leaving it. This is important, as it packs the soil close to the roots, helping it to retain moisture, and preventing the air from entering. One after the other, all the kinds are planted."

C. "Then what?"

B. "If you are now careless and lose all your interest in the subject, and keep busy at something else, you will very likely leave the young things to look out for themselves. The grass and weeds will choke them, and your little enterprise will cause deep regret, every time you think of it and prove the laughing stock of all your neighbors."

C. "I am not that kind of a farmer, to drop a thing before I give it a fair trial."

B. "Then you will cultivate this land as you do your best cornfield, with level culture, only continue to cultivate all summer."

C. "What shall I do next?"

B. "Keep on cultivating during succeeding years, as long as a horse can get through the rows, perhaps four or five years or more, then the trees will not need it any longer. From time to time you will very likely pick up some other kinds of very small trees, or shrubs from the neighboring woods, and set them in among the others in the grove. If the cultivation is attended to, and the land is not too wet, you will be surprised at the rapid growth of the trees."

C. "Why can't I mulch the ground all over with straw from the old stack and save all further trouble?"

B. "It is not a good plan, and if you try it you will be disappointed. Cultivation is much better, and with the trees near the house, it is but a light chore to cultivate each time. If black walnuts, chestnuts, butternuts, hickories and oaks are desired in any places, plant the nuts where the trees are to remain."

C. "Thank you. I feel sure now that I understand the plan. It is so much cheaper and easier than I had supposed, that I am going to plant a grove, even a small one started this year will be much better than a larger one long delayed and perhaps never planted."

B. "In older States like Massachusetts farms already bring a better price if they contain some suitable groves or lots of young thrifty timber. As the grove improves with age, you will be reading every good thing you can get on forestry. You will take a deeper interest in the work of the State Forestry commission. You will want to see their last report and all that may be issued in the future. You will have a good right to consider yourself as one of Michigan's most enterprising farmers. You will be planting for study as well as for producing a grove to shield animals or growing crops from the severe winds. You will be an experimenter, a pioneer in a good cause, and the longer you live the more will you see the importance of a knowledge of forestry."

"What is the custom in this neighborhood in regard to pasturing wood-lots?"

C. "Every one turns in his cattle, sheep, horses and hogs or one or more kinds of these animals. It affords some feed, and cleans out lots of rubbish and makes the woods look like a park."

B. "Yes, and it lets in the light, and with the light grasses will slowly creep in, affording more pasture, to be sure, but this will check the growth of larger trees and small trees are not allowed to follow on to take their places. The man who has much interest in the future of his reserve timber lot will not use it for a pasture."

Reader, if not already done, will you not plant a grove this year, or do something to induce some of your friends to plant one? The writer will be glad to give any further instructions in his power on this subject, and would consider it a favor to receive a postal card from any who contemplate a grove.

March 20, 1889.

STATUTORY PROVISIONS.

It is provided by the Agriculture and Arts Act, 49 Victoria, chap. 11 (1886), that the Fruit Growers' Association should be a body corporate, comprising not less than fifty members, each paying an annual subscription fee of not less than \$1; that it shall hold an annual meeting at such time and place as may be determined upon; that the retiring officers shall at such meeting present a full report of their proceedings; and of the proceedings of the Association, and a detailed statement of its receipts and expenditure for the previous year, duly audited by the Auditors; that the Association shall at such meeting elect a President, a Vice-President, and one Director from each of the Agricultural Divisions of the Province (mentioned in Schedule A following), and the officers and Directors so elected shall appoint from among themselves, or otherwise, a Secretary and a Treasurer, or a Secretary-Treasurer; and that the Association shall also elect two Auditors.

Vacancies occurring through death, resignation, or otherwise in the directorate of the Fruit Growers Association, shall be filled by the Board of Directors.

The officers shall have full power to act for and on behalf of the Association, and all grants of money and other funds of the Association shall be received and expended under their direction, subject nevertheless to the by-laws and regulations of the Association.

A copy of the Annual Report of its proceedings, a statement of receipts and expenditure, a list of the officers elected, and also such general information on matters of special interest as the Association have been able to obtain, shall be sent to the Commissioner of Agriculture within forty days after the holding of such annual meeting.

SCHEDULE A.—AGRICULTURAL DIVISIONS.

1. Stormont, Dundas, Glengarry, Prescott and Cornwall.
2. Lanark North, Lanark South, Renfrew North, Renfrew South, Carleton, Russell and the City of Ottawa.
3. Frontenac, City of Kingston, Leeds and Grenville North, Leeds South, Grenville South and Brockville.
4. Hastings East, Hastings North, Hastings West, Addington, Lennox and Prince Edward.
5. Durham East, Durham West, Northumberland East, Northumberland West, Peterborough East, Peterborough West, Victoria North (including Haliburton), and Victoria South.
6. York East, York North, York West, Ontario North, Ontario South, Peel, Cardwell and City of Toronto.
7. Wellington Centre, Wellington South, Wellington West, Waterloo North, Waterloo South, Wentworth North, Wentworth South, Dufferin, Halton and City of Hamilton.
8. Lincoln, Niagara, Welland, Haldimand and Monck.
9. Elgin East, Elgin West, Brant North, Brant South, Oxford North, Oxford South, Norfolk North and Norfolk South.
10. Huron East, Huron South, Huron West, Bruce Centre, Bruce North, Bruce South, Grey East, Grey North and Grey South.
11. Perth North, Perth South, Middlesex East, Middlesex North, Middlesex West and City of London.
12. Essex North, Essex South, Kent East, Kent West, Lambton East and Lambton West.
13. Algoma East, Algoma West, Simcoe East, Simcoe South, Simcoe West, Muskoka and Parry Sound.

CONSTITUTION OF THE ASSOCIATION.

Art. I.—This Association shall be called "The Fruit Growers' Association of Ontario."

Art. II.—Its objects shall be the advancement of the science and art of fruit culture by holding meetings for the Exhibition of fruit and for the discussion of all questions relative to fruit culture, by collecting, arranging and disseminating useful information, and by such other means as may from time to time seem advisable.

Art. III.—The annual meeting of the Association shall be held at such time and place as shall be designated by the Association.

Art. IV.—The officers of the Association shall be composed of a President, Vice-President, a Secretary, or Secretary-Treasurer, and thirteen Directors.

Art. V.—Any person may become a member by an annual payment of one dollar, and a payment of ten dollars shall constitute a member for life.

Art. VI.—This Constitution may be amended by a vote of a majority of the members present at and regular meeting, notice of the proposed amendments having been given at the previous meeting.

Art. VII.—The said Officers and Directors shall prepare and present to the annual meeting of the Association a report of their proceedings during the year, in which shall be stated the names of all the members of the Association, the places of meeting during the year, and such information as the Association shall have been able to obtain on the subject of fruit culture in the Province during the year. There shall also be presented at the said annual meeting a detailed statement of the receipts and disbursements of the Association during the year, which report and statement shall be entered in the journal and signed by the President as being a correct copy; and a true copy thereof, certified by the Secretary for the time being, shall be sent to the Commissioner of Agriculture within forty days after the holding of such annual meeting.

Art. VIII.—The Association shall have power to make, alter and amend By-laws for prescribing the mode of admission of new members, the election of officers, and otherwise regulating the administration of its affairs and property.

BY-LAWS.

1. The President, Vice-President and Secretary-Treasurer shall be *ex-officio* members of all committees.
2. The directors may offer premiums to any person originating or introducing any new fruit adapted to the climate of the Province which shall possess such distinctive excellence as shall, in their opinion, render the same of special value; also for essays upon such subjects connected with fruit-growing as they may designate, under such rules and regulations as they may prescribe.

3. The Secretary shall prepare an annual report containing the minutes of the proceedings of meetings during the year; a detailed statement of receipts and expenditure; the reports upon fruits received from different localities; and all essays to which prizes have been awarded, and such other information in regard to fruit culture as may have been received during the year, and submit the same to the Directors or any Committee of Directors appointed for this purpose, and, with their sanction, after presenting the same at the annual meeting, cause the same to be printed by and through the Publication Committee, and send a copy thereof to each member of the Association and to the Commissioner of Agriculture.

4. Seven Directors shall constitute a quorum, and if at any meeting of Directors there shall not be a quorum, the members present may adjourn the meeting from time to time until a quorum shall be obtained.

5. The annual subscription shall be due in advance at the annual meeting.

6. The President (or in case of his disability, the Vice-President) may convene special meetings at such times and places as he may deem advisable, and he shall convene such special meetings as shall be requested in writing by five members.

7. The President may deliver an address on some subject relating to the objects of the Association.

8. The Treasurer shall receive all moneys belonging to the Association, keep a correct account thereof and submit the same to the Directors at any legal meeting of such Directors, five days' notice having been previously given for that purpose.

9. The Directors shall audit and pass all accounts, which, when approved of by the President's signature, shall be submitted to and paid by the Treasurer.

10. It shall be the duty of the Secretary to keep a correct record of the proceedings of the Association, conduct the correspondence, give not less than ten days' notice of all meetings to the members, and specify the business of special meetings.

11. The Directors, touching the conduct of the Association, shall at all times have absolute power and control of the funds and property of the Association, subject however to the meaning and construction of the Constitution.

12. At special meetings no business shall be transacted except that stated in the Secretary's circular.

13. The order of business shall be: (1) Reading of the minutes; (2) Reading of the Directors' Report; (3) Reading of the Treasurer's Report; (4) Reading of prize essays; (5) President's Address; (6) Election of officers, and (7) Miscellaneous business.

14. These By-laws may be amended at any general meeting by a vote of two-thirds of the members present.

15. Each member of the Fruit Committee shall be charged with the duty of accumulating information touching the state of the fruit crop, the introduction of new varieties, the market value of fruits in his particular section of the country, together with such other general and useful information touching fruit interests as may be desirable, and report in writing to the Secretary of the Association on or before the fifteenth day of September in each year.

The President, Vice-President and Secretary shall be *ex-officio* members of the Board of Directors and of all Committees. The reasonable and necessary expenses of Directors and officers in attending meetings of the Board of Directors and of Committees shall be provided from the funds of the Association.

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